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University — Université

UNIVERSITY OF ALBERTA

Degree for which thesis was presented — Grade pour lequel cette thèse fut présentée

PH.D.

Year this degree conferred — Année d'obtention de ce grade 1980	Name of Supervisor — Nom du directeur de thèse DR. M. A. HALL

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Physical Activity Participation of Adolescent Girls

by

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A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF Doctor of Philosophy

Physical Education

EDMONTON, ALBERTA
Spring, 1980

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Physical Activity Participation of Adolescent Girls submitted by Janice Butcher in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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Date March 20/1980

ABSTRACT

A two-year study was undertaken in the Edmonton Catholic School District to assess the physical activity participation of adolescent girls. The purposes of the study were twofold: (1) To determine if adolescent girls' participation in physical activity differed with grade, and if so, at what grades differences occurred. (2) To determine what variables were related to physical activity participation of adolescent girls.

A random sample of 661 Grade 6 to 10 girls was selected. A questionnaire was devised to measure the variables and was pilot-tested on a sample similar to the study sample. The questionnaire was first administered to the subjects in May of 1978. This testing session yielded data for a cross-sectional analysis of girls over a five-year time span--a span where most girls go through puberty and its resultant physical, emotional, and social changes. The questionnaire was readministered to the same sample a year later in May of 1979 in order to determine differences in physical activity participation and differences in the other selected variables.

The six participation variables were compared from Grade 6 to Grade 10 using univariate and multivariate analyses of variance. The relationship between the participation and the other variables was analyzed using canonical correlations, individual correlations, and factor analysis.

The results of the study showed that overall participation in physical activity declined from Grade 6 to Grade 10 but in varying amounts for different types of activities. Participation in school-related activities, the number of interschool teams and intramural activities, decreased abruptly when the girls reached senior high school. Participation in community organized activities and total number of activities remained consistent from Grade 6 to Grade 10.

Of the related variables included in the study, five variables were most related to participation in physical activity: movement satisfaction, especially satisfaction with sports skills; significant others' encouragement and socialization influence; opportunity set; self-confident, independent, and assertive self-descriptions; and attitude toward physical activity for training and competition.

These variables were more related to some types of physical activity than others. The school-related variables, number of interschool teams and intramural activities, were most related to satisfaction with sports skills and to self-confident, independent, and assertive self-descriptions. Community organized activities were most related to mother's and father's socialization influence and to socio-economic status. The total number of activities was most related to the amount of sports equipment available.

ACKNOWLEDGEMENTS

Appreciation is extended to my advisor, Dr. M. A. Hall, for her help and guidance throughout the completion of this thesis. I would also like to thank my committee members, Dr. J. B. Acheson, Dr. A. E. Wall, Dr. L. M. Wankel, and Dr. L. Wilgosh, and my external examiner, Dr. S. L. Greendorfer, for their assistance.

A special word of thanks must be given to the administrators, principals, and teachers of the Edmonton Catholic School District for their support of the study. The study also could not have been completed without the co-operation of the girls who completed the questionnaire.

The Planning and Research Branch of Alberta Education provided a grant to cover the expenses of the research, and the Social Sciences and Humanities Research Council of Canada awarded me a doctoral fellowship for the one and a half years that I was working on the thesis. To these two agencies my appreciation is sincerely extended.

Many other people have assisted with the completion of this thesis and to the following people I give my heartfelt thanks: Dr. T. Macquire for advice on the statistical analysis, the consultants at the Computing Centre for their never-ending help when I needed it, and Mrs. J. Theander and Mrs. E. Peters for their meticulous typing of the thesis.

Finally, I would like to thank my husband, Dale, and daughter, Anisa, for their patience, love, and support while I worked on this task.

TABLE OF CONTENTS

Chapter Page

1. INTRODUCTION 1
    STATEMENT OF THE PROBLEM 1
    OBJECTIVES 2
    SIGNIFICANCE OF THE STUDY. 2
    OVERVIEW OF THE STUDY. 4
    VARIABLES INCLUDED IN THE STUDY. 5
        Participation in Physical Activity 5
        Factors Related to Participation in Physical Activity 6
    LIMITATIONS. 10
2. REVIEW OF LITERATURE 11
    ADOLESCENT GIRLS' PARTICIPATION IN PHYSICAL ACTIVITY. 11
    FACTORS RELATED TO PARTICIPATION 13
        Socialization into Participation 13
        Continuation in Participation. 30
        Studies of Participation Correlates. . . . 39
3. THE INSTRUMENTS. 41
    HOLLAND'S SELF DIRECTED SEARCH 43
    BEM'S SEX ROLE INVENTORY 45
    ROSENBERG'S SELF ESTEEM SCALE. 48
    TOMBOYISM. 50
    ACTIVITY PREFERENCE. 50

Chapter Page

NELSON AND ALLEN'S SCALE FOR THE APPRAISAL OF MOVEMENT SATISFACTION 50

SECORD AND JOURARD'S BODY CATHEXIS SCALE. 52

SATISFACTION WITH PHYSICAL EDUCATION SCALE. 54

SIMON AND SMOLL'S CHILDREN'S ATTITUDE TOWARD PHYSICAL ACTIVITY INVENTORY 56

IMAGE OF THE FEMALE ATHLETE. 59

PHYSICAL ACTIVITY PARTICIPATION. 60

SOCIALIZATION VARIABLES 62

SITUATIONAL VARIABLES 63

DESCRIPTIVE INFORMATION. 64

ORDER OF PRESENTATION OF INSTRUMENTS 66

4. METHODS AND PROCEDURES 68

THE SAMPLE 68

The Population 68

Selecting the Schools. 69

Selecting the Subjects 70

Subjects Completing Survey 72

COLLECTION OF DATA 75

Year One of Study. 75

Year Two of Study. 79

DATA PREPARATION 82

Variable Transformations 83

Chapter Page

STATISTICAL ANALYSIS 88

Descriptive Statistics 88

Analytical Statistics 88

5. DESCRIPTIVE RESULTS 94

DEMOGRAPHIC INFORMATION. 94

OPEN-ENDED QUESTIONS 102

Physical Education Program 103

Participation in Physical Activity . . 105

Types of Activities. 109

Role Models 111

OTHER ACTIVITIES AND INTERESTS 112

6. ANALYTICAL RESULTS 118

ANALYSIS OF PARTICIPATION 118

Participation Variables Combined . . . 118

Individual Participation Variables . . 123

Comparison of Year 1 and Year 2 . . . 124

Summary. 141

RELATIONSHIP BETWEEN PARTICIPATION AND RELATED VARIABLES. 142

Canonical Correlation. 142

Individual Correlations. 144

Factor Analysis. 147

Summary 157

Chapter Page

COMPARISON OF FACTORS AND VARIABLES BY GRADE. 161

Comparison of Factors by Grade. 161

Comparison of Related Variables by Grade. 163

Comparison of Variables between Year 1 and Year 2. 165

7. CONCLUSIONS AND DISCUSSION. 168

DIFFERENCES IN EXTENT OF PARTICIPATION. . . 168

Conclusions 168

Discussion 170

FACTORS RELATED TO PARTICIPATION IN PHYSICAL ACTIVITY 178

Conclusions 178

Discussion 179

SUMMARY OF MAJOR FINDINGS 187

Extent of Adolescent Girls' Participation in Physical Activity. 187

Factors Related to Participation in Physical Activity 187

RECOMMENDATIONS FOR FURTHER STUDY 188

RECOMMENDATIONS FOR PROGRAM IMPLEMENTATION. 190

BIBLIOGRAPHY 192

APPENDICES 203

A. The Questionnaire 203

B. Changes in Wording to Original Instruments. . 225

C. The Pilot Study 229

Chapter Page

D. Reliability Measures. 237

E. Physical Education Teachers' Rating Scales. . . 245

F. Letters to Principals and Subjects. 247

G. Value Codes for Open-ended Questions. 251

H. Transformed Variables with Value Codes. 256

I. Explanation of Variable Abbreviations 265

J. Frequency of Missing Items of Instruments . . . 268

K. Responses to Open-ended Questions Regarding Physical Education 274

L. Responses to Open-ended Questions Regarding Physical Activity 278

M. Types of Activities 284

N. Favourite Female Sports Participants. 291

O. Comparison of Participation Variables by Pairs of Grades 293

P. Canonical Correlation Weights 296

Q. Correlations of Participation and Related Variables 299

R. Correlation Matrix. 306

S. Analysis of Variance with Repeated Measures . . 311

LIST OF TABLES

Table Page

1. Research Instruments. 42

2. Reliability of Holland's Self Directed Search 45

3. Reliability of Attitude toward Physical Activity Scales 58

4. Reliability of Instruments. 61

5. Population of Study 68

6. Sample of Schools from Edmonton Catholic School District 70

7. Sample Selected by School 73

8. Percentage Response Rate--Year 1. 74

9. Percentage Response Rate--Year 2. 74

10. Instruments Requiring Averaged Scores 85

11. The Sample by Grade 94

12. Ages of Sample 95

13. Age of Menarche 96

14. Socio-Economic Status 97

15. Parents' Education 98

16. Language Spoken Other Than English. 100

17. Sibling Sex Status. 100

18. Height of Sample. 101

19. Weight of Sample. 102

20. Preference of Activities. 113

Table Page

21. Responses to "What Would You Most Like to do at School?". 115

22. Perceptions of What Makes Subjects Popular . 115

23. Ranking of Interest Dimensions 116

24. Multivariate Analysis of Participation Vector Means--Year 1 120

25. Multivariate Analysis of Participation Vector Means--Year 2 121

26. Mahalanobis Distance between Participation Vectors--Year 1 122

27. Mahalanobis Distance between Participation Vectors--Year 2 122

28. Comparison of Participation Variables by Grade--Year 1 125

29. Comparison of Participation Variables by Grade--Year 2 127

30. Comparison of Year 1 and Year 2 Participation Variables 130

31. Interschool Difference Scores by Grade . . . 134

32. Intramural Difference Scores by Grade. . . . 135

33. Community Organized Difference Scores by Grade 136

34. Total Activities Difference Scores by Grade 137

35. Total Hours Difference Scores by Grade . . . 138

36. Favourite Frequency Difference Scores by Grade 139

37. Summary of Grade 7-8 and 9-10 Difference Scores 140

38. Canonical Correlations Between the Participation and Related Variables for Total Sample 143

Table Page

39. Canonical Correlations Between the Participation and Related Variables by Grade. 143

40. Individual Correlations of Participation and Related Variables for Total Sample 145

41. Factors from Total Sample Factor Analysis. . . 148

42. Factors from Grade 6 Factor Analysis 149

43. Factors from Grade 7 Factor Analysis 150

44. Factors from Grade 8 Factor Analysis 151

45. Factors from Grade 9 Factor Analysis 152

46. Factors from Grade 10 Factor Analysis 153

47. Summary of Relationships Between Participation and Related Variables for Total Sample 158

48. Comparison of Factors by Grade 162

49. Comparison of Related Variables by Grade . . . 164

50. Pilot Study Sample Completing Retest 233

51. Factor Analysis of Holland's Self Directed Search 238

52. Factor Analysis of Bem's Sex Role Inventory. . 240

53. Guttman Analysis of Rosenberg's Self Esteem Scale 241

54. Factor Analysis of Movement Satisfaction Scale 242

55. Factor Analysis of Body Cathexis Scale 244

56. Missing Items--Holland's Self Directed Search 269

57. Missing Items--Movement Satisfaction and Body Cathexis Instruments. 270

Table Page

58. Missing Items--Sex Role Orientation and Physical Education Instruments 271

59. Missing Items--Semantic Differential Scales. 272

60. Subjects Missing Significant Others. 273

61. Most Important Reason for Having Physical Education 275

62. Factors Liked Most About Physical Education 276

63. Factors Liked Least About Physical Education 277

64. Factors Liked Most About Physical Activity . 279

65. Factors Liked Least About Physical Activity 280

66. Reasons for Most Favourite Physical Activity 281

67. Responses to "Why do You Not Participate as Much as Last Year?" 282

68. Responses to "Why do You Not Participate More?" 283

69. Interschool Teams. 285

70. Community Organized Activities 286

71. Summer Activities 287

72. Spring/Fall Activities 288

73. Winter Activities 289

74. Four Most Favourite Activities 290

75. Favourite Female Sports Participant. 292

76. Comparison of Participation Variables by Pairs of Grades--Year 1. 294

Table Page

77. Comparison of Participation Variables by Pairs of Grades--Year 2. 295

78. Canonical Weights of Participation and Related Variables for Total Sample 297

79. Canonical Weights of Participation and Related Variables by Grade 298

80. Correlations of Related Variables with Interschool Teams. 300

81. Correlations of Related Variables with Intramural Activities. 301

82. Correlations of Related Variables with Community Organized Activities 302

83. Correlations of Related Variables with Total Activities 303

84. Correlations of Related Variables with Average Hours Per Day. 304

85. Correlations of Related Variables with Frequency of Favourite Activities. 305

86. Comparison of Year 1 and Year 2 Related Variables 311

LIST OF FIGURES

Figure Page

1. Sport Involvement Socialization Model 6

2. Significant Interactions of Participation Variables Aligned by Subject Group 131

3. Significant Interactions of Participation Variables Aligned by Grade 132

Chapter 1

INTRODUCTION

From ancient times, girls and women have been involved in physical activity. They have walked, run, jumped, and thrown. Yet, it has only been in very recent times that scholars have begun investigating this participation in physical activity.

The literature suggests that female participation tends to decrease with age, but when, how, and why it decreases is not known. Does the alleged drop-off occur before, at, or after puberty? How does it change? Do all types of activities change? Is there a difference between competitive, organized, and recreational activities? Finally, why does it change? What factors are related to participation? If physical activity tends to decrease with age, then what other activities and interests replace it? These are some of the questions that were investigated by this study.

STATEMENT OF THE PROBLEM

The study had two main purposes. The first was to determine if adolescent girls' participation in physical activity differed with age, and if so, at what ages those differences occurred. The second was to investigate what factors or variables were related to physical activity participation.

OBJECTIVES

The study was an exploratory study which tried to provide some insight into the overall physical activity participation of adolescent girls. Its prime objective was to provide answers to the two main questions delineated in the statement of the problem. However, the study was also designed to describe the kinds of physical activities in which adolescent girls were involved, competitive, organized, and recreational, and to describe how the girls felt about physical activity. Some of their other interests and activities were also explored. In summary, the study was designed to give an overall picture of adolescent girls' participation in physical activity with its accompanying age differences.

SIGNIFICANCE OF THE STUDY

The study is significant in three main respects: for examining the extent of adolescent girls' participation in physical activity, for delineating the factors most related to physical activity participation, and for suggesting practical implications for physical education and recreation programming.

Firstly, the study gives concrete evidence as to whether female participation does indeed decrease through the adolescent years for all types of activities. Physical educators, in particular, have complained about this trend of declined participation and accompanying change in attitude. Most researchers have either used a global measure of physical activity or have examined only one type of activity. This study examined physical activity in six different ways and thus hopefully tapped all dimensions of activity. Much of the research on physical activity also begins around ages 14 to 17 and does not examine the years when girls are maturing and going through puberty. This study surveyed girls from 11 years of age onwards and so bridged the gap from childhood to early adulthood.

The study delineates the factors related to adolescent girls' physical activity participation and thus contributes to the theoretical knowledge of female sport involvement. It included many of the variables thought to be related to participation and examined them in a single study. Much previous research has examined only one or two variables at a time. Also, it has been assumed in the literature that certain variables, such as self-esteem and body image, should be related to participation in physical activity, with little theoretical rationale. This study examined these variables with a number of other variables to determine if they were indeed strongly related to participation. Thus, only those variables that are most related to participation need to be included in further research on female sport involvement, and they can subsequently be examined in more detail. This exploratory study, then, should pave the way for more in-depth research on the factors influencing physical activity participation of adolescent girls.

Finally, the study has practical implications for physical education and recreation programming. A knowledge of the differences in physical activities preferred by different ages of girls will be useful in planning programs. Also, if the factors related to physical activity participation are known, programs can be tailored to meet the changing needs of maturing girls.

OVERVIEW OF THE STUDY

The study was designed to obtain data on adolescent girls' participation in physical activity and on other variables related to that participation over a two-year period. A questionnaire was designed to measure the variables and was pilot tested on a sample similar to the study sample. The questionnaire was first administered to Grade 6 to Grade 10 girls in the Edmonton Catholic School District in May of 1978. This testing session yielded data for a cross-sectional analysis of girls over a five year time span--a span where most girls go through puberty and its resultant physical, emotional, and social changes. The questionnaire was readministered to the same sample a year later in May of 1979 in order to determine differences in physical activity participation and differences in the other selected variables from one year to the next. This was the beginning of a longitudinal study of adolescent girls' physical activity participation.

VARIABLES INCLUDED IN THE STUDY

Participation in Physical Activity

For the purpose of this study, participation in physical activity was considered in several different ways to derive as much information as possible about adolescent girls' physical activities. Physical activity can be divided into different types and descriptions of three such types follow:

1. Competitive Activities: Activities where the participants compete against other individuals or teams to determine which individual or team is superior.

2. Organized Activities: Activities that are organized by some group or individual with a specific time and place where they will be held. They may involve competition but the primary objectives are participation and instruction.

3. Recreational Activities: Activities in which individuals participate, whenever they wish, with whomever they wish, and wherever they wish.

Six variables were included in the study, then, to measure physical activity:

1. Number of interschool teams
2. Number of intramural activities
3. Number of community organized activities
4. Total number of activities in which individuals participated
5. Average number of hours spent in physical activity per day

6. Frequency of participation in four favourite activities.

Factors Related to Participation in Physical Activity

When examining the factors related to participation in physical activity, two distinct questions were asked:

1. Why do girls begin participating in the first place?
2. Why do girls continue to participate in physical activity?

The first question about why girls begin participating in the first place can be answered through an examination of the socialization process.

Kenyon and McPherson (1973) have proposed a model for sport involvement socialization based on social learning theory. The model contains three elements or factors which influence sport involvement as illustrated in Figure 1.

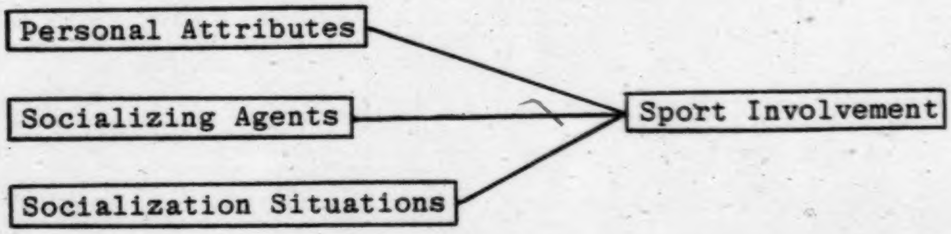

Figure 1

Sport Involvement Socialization Model

Although Kenyon and McPherson (1973) propose that personal attributes contribute to sport involvement, they have never researched them. This study examined a number of personal attributes to determine their relationship with physical activity. There were other attributes that could have been included, but the study was limited to variables that had been studied extensively in the physical activity literature and/or that were intuitively felt by the researcher to be related to physical activity.

The socialization variables that were included in the study are presented below with their theoretical definitions:

1. Personal Attributes

a. Self-esteem: The degree to which an individual respects herself and considers herself worthy (Rosenberg, 1965).

b. Body cathexis: The degree of satisfaction or dissatisfaction with the various parts or processes of the body (Secord and Jourard, 1953).

c. Movement satisfaction: The degree of satisfaction or dissatisfaction with an individual's ability to move in various situations.

d. Interest in types of activities: An individual's preference for some activities as opposed to others (Holland, 1973).

e. Sex role orientation: The degree to which an individual subscribes to the behaviors and characteristics typical of the two sex roles.

f. Tomboyism: The degree of active, "masculine" behaviors displayed by a girl (Hyde, Rosenberg, Behrman, 1977).

g. Activity preference: The degree to which an individual prefers quiet, sedentary activities to active, moving ones.

h. Menarchial age: The age at which a female begins menstruating.

2. Socializing Agents

a. Significant others' participation: The degree of participation in physical activity by significant others.

b. Significant others' encouragement: The degree to which significant others encourage an individual to participate in physical activity.

c. Father's socialization influence: The degree to which the father influences the individual to participate in physical activity through encouragement, example (participating himself), and interest in the individual's physical activity.

d. Mother's socialization influence: The degree to which the mother influences the individual to participate in physical activity through encouragement, example (participating herself), and interest in the individual's physical activity.

e. Sibling sex status: The number and sex of an individual's siblings.

f. Ordinal position: The number of siblings older than an individual.

3. Socialization Situations

a. Socio-economic status: The ranking of Canadian occupations in terms of social class.

b. Amount of sports equipment: The number of pieces of sports equipment owned by the individual's family and accessible to her.

Little research has investigated why some girls continue to participate in physical activity once they have begun participating, while others do not. Orlick (1972) found three major factors which accounted for attraction to or avoidance of sports participation among eight and nine year old boys. The three factors were significant sport role models which were available to the child (parents), expectancies the child had regarding sports participation, and sport related reinforcement contingencies to which the child was exposed. Thus, Orlick examined socialization influences on physical activity participation (role models and reinforcement) as well as psychological constructs such as expectancies and aspirations.

Several psychological constructs were included in this study to investigate their relationship with participation in physical activity. Firstly, an instrument was included that measured satisfaction with physical education. Physical education is a prevalent and fairly consistent part of almost every adolescent girls' physical activity participation. Next, attitudes toward different subdomains of physical activity were included to determine which subdomains were most related to continued participation. Finally, the "image of the female athlete" was included to determine the adolescent girls' perceptions of female athletes in our society. The theoretical definitions of these three variables follow:

1. Satisfaction with physical education: The degree of satisfaction or dissatisfaction with an individual's physical education program.

2. Attitude toward physical activity: The behavioral disposition reflecting both direction and intensity of feeling toward sports or activities that require vigorous bodily movement (Kenyon, 1968b).

3. Image of the female athlete: The behavioral disposition reflecting both direction and intensity of feeling toward females participating in vigorous physical activity.

LIMITATIONS

Because of the nature of the study, the results were limited by the subjects' interpretation of each instrument item, by the items included in the instrument package, and by the author's interpretation of the results. Also, when comparing the results from one year to the next, extraneous factors, such as the Commonwealth Games held in Edmonton between the two testing sessions, must be considered.

Chapter 2

REVIEW OF LITERATURE

The literature review includes two main areas: research on the extent of adolescent girls' participation in physical activity, and factors related to participation.

ADOLESCENT GIRLS' PARTICIPATION IN PHYSICAL ACTIVITY

Few researchers in the area of physical activity have actually measured the extent of Canadian adolescent girls' participation. Kenyon (1968c) measured the frequency of participation in activities the subjects felt represented the six subdomains of physical activity. However, he did not obtain a total measure of participation. He did report that 58 percent of his sample of 15 year old Canadian girls belonged to one or more clubs or organizations sponsoring sports or physical activity.

Statistics Canada have made two surveys in 1972 and 1976 which have included girls from age 14 and above. Hall (1975), in a summary of the 1972 survey, reported the percentage of girls that participated in sports (not just exercising, like walking, jogging, and hiking) for 0, 1-3, 4-7, 8-14, and over 15 hours per week. From those statistics it is difficult to determine average hours per day for different age groups, but some rough calculations indicated that 14 year old girls participated for an average of 2.31 hours per week in sports, 15 to 16 year old girls for 2.33 hours per week and 17 to 19 year old girls for 1.53 hours per week. The girls in the 17 to 19 age group would be at the stage in their lives when they were leaving school and embarking on post-secondary education or jobs. This might explain their decreased participation.

The 1976 survey reported in Statistics Canada (1978) did not give participation broken down by sex. Eighty-four percent of the 14 year old sample and 82 percent of the 15 to 16 year old sample participated in one or more sports at least once in the previous 12 months. This type of measurement makes accurate estimations of the extent of participation very difficult.

Bratton (1977) surveyed girls in a Calgary junior high school. Eighteen percent of his sample competed on at least one interschool team, 79 percent competed on at least one intramural team, and 39 percent competed on at least one community team.

Butcher (1976a) measured physical activity participation of Grade 10 to 12 high school girls in three ways: average number of hours per week, number of interschool teams, and number of competitive activities outside of school. There were considerable differences between the group who elected physical education and the group who did not. The average hours per week were 11.7 and 8.4 hours respectively. Forty-four percent of the physical education group and only 4.8 percent of the non-physical education group competed on one or more interschool teams. For competitive activities outside of school, 39.8 percent of the physical education group and 21.9 percent of the non-physical education group competed in one or more activities.

Each of these researchers measured different aspects of physical activity and used different ways of measuring those aspects. This makes it difficult to compare the results from one study to another.

FACTORS RELATED TO PARTICIPATION

Socialization into Participation

Kenyon and McPherson (1973) have proposed a model for sport involvement socialization which includes three elements:

1. Personal attributes
2. Socializing agents
3. Socialization situations

The literature pertaining to the variables included in the study under each of these three elements is reviewed in the following section.

Personal Attributes

Much of the research on personal attributes has examined differences between athletes and non-athletes, participants and non-participants. The differences for each of the variables are noted.

Self Esteem. Several researchers have examined the relationship between self esteem or self concept and physical activity. Allen (1972) summarized the research concerning females' self concept and physical performance.

> One's performance in such physical activities as physical fitness, body mechanics, motor skills, and motor ability does not appear to influence self concept nor does one's self concept appear to influence performance scores (p.40).

Harris (1973a) reviewed a number of studies on males and females that have endeavoured to relate self concept to various aspects of physical activity involvement. Although the findings she reports are conflicting, she concludes that:

> it appears that physical activity and sport experiences provide tremendous opportunity for the individual to experience a sense of success and satisfaction which reinforces a positive sense of self (Harris, 1973a, p.175).

More recent research on females shows much inconsistency in the findings. Bhullar (1974) found the female athlete to have lowered self acceptance levels while Snyder and Spreitzer (1974) found a positive relationship between sports involvement and psychological well-being. Snyder and Kivlin (1975), using Secord and Jourard's Self Cathexis Scale found national intercollegiate team and individual athletes had significantly better scores on psychological well-being than did university sociology students. Of the athletic group, gymnasts had the highest scores. Cochran, Aiken, Hartman, and Young (1977) also used Secord and Jourard's Scale and found that individual athletes had significantly stronger self images than non-sports participants, but team athletes had significantly weaker self images. They suggest that

> sex-role stereotypes affect the self-image of sports participants. Females engaging in perceived non-sex role sports (team sports) had a poorer self-image than women in more socially acceptable sports (individual) (Cochran et al., 1977, p.6).

The Tennessee Self Concept Scale was used by Ibrahim and Morrison (1976) to compare self concepts of high school and college female athletes and non-athletes. There was no significant difference between the two groups. Using the same scale with college females, Vincent (1976) found that college athletes were not significantly higher in self concept than non-athletes but that physical education majors had higher scores than non-physical education majors. With these contradictions it is difficult to draw conclusions about the relationship of self concept and physical activity participation.

Body Image. A great deal of research has examined the concept of body image and several reviews have been written (Strati, 1972; Harris, 1973b; Mathes, 1978). There are two components to body image--the physical and the psychological. The physical examines children's developing awareness of the body and its various parts, body size estimation, and body boundary measurement. The second, or psychological component of body image, is concerned with the subjective evaluation of the body or feelings of satisfaction and dissatisfaction. This component is more applicable to a study of participation in physical activity. Secord and Jourard's (1953) term of body cathexis is frequently used for body image as it means the degree of satisfaction or dissatisfaction with the body.

Has the research shown any relationship between body cathexis and participation in physical activity? Harris (1973b), in a review of the research, concluded that

> there appears to be enough empirical data to suggest that the movement experiences of an individual have a great deal of influence upon the development of the body image (p.154).

Recent research supports this conclusion. Rhorbacher (1973) tried to determine the effects of weight change over a period of time on the body image and self concept of overweight boys. Weight loss during the camp period was not significantly associated with a positive change in body image or self concept. However, weight change following the camp four months later was positively associated with changes in body image but not self concept.

Snyder and Kivlin (1975), using Secord and Jourard's Body Cathexis Scale, found national intercollegiate female athletes had significantly higher scores than university sociology students. Using the same scale on female college team and individual athletes, Cochran et al. (1977) found that individual athletes had higher scores than non-sports participants, but that team athletes had lower scores. However, an analysis of variance on ranks failed to produce any significant differences.

Of particular relevance to this study is Hendry and

Gillies' (1978) study of 15 and 16 year old adolescents categorized as "overweight", "underweight" or "average" based on the ponderal index. The overweight girls scored significantly lower on body esteem as measured by a semantic differential technique. They also participated in fewer extracurricular school sports and out-of-school leisure sports but this was not significant using the Chi-square statistic.

Numerous researchers have examined the relationship between body image and self concept and have found quite conclusively that they are related (Secord and Jourard, 1953; Jourard and Remy, 1957; Weinberg, 1960; Zion, 1965; Darden, 1972; Rohbacher, 1973; Douty, Moore, and Hartford, 1974).

Movement Satisfaction. Doudlah (1962) was one of the first researchers to investigate concepts of the body while it was moving. Using a Q-sort technique on college freshmen women she found a significant correlation between body concept and movement concept, between movement concept and a motor ability test, and between body concept and self concept. There was, however, no significant relationship between movement concept and self concept. Nelson and Allen (1970) subsequently developed a Likert-type movement satisfaction scale to assess an individual's attitude toward her ability to move. Using their Scale for the Appraisal of Movement Satisfaction on 14 to 21 year old men and women, they found that male subjects responded with greater degrees of satisfaction than women and that older subjects responded with more dissatisfaction than younger subjects. However, women expressed more satisfaction with those aspects of their movement which related to rhythmical and graceful qualities.

Other studies have also used Nelson and Allen's (1970) Movement Satisfaction Scale. Trinkley (1974) tested college dancers, gymnasts, swimmers, and tennis players for differences in movement satisfaction but found no differences. All had very strong positive feelings. Burton (1976) examined the effect of four different physical education activities (golf-archery, figure improvement, dance, and elementary methods) on movement satisfaction and anxiety. The movement satisfaction scores improved significantly over the term for all but the golf-archery activity. The low trait anxiety subjects had higher movement satisfaction scores than the high trait anxiety subjects.

Tanner (1969) revised and adapted Nelson and Allen's (1970) scale for use with primary grade children. She found that the first and second grade children in a basic movement physical education program had significantly higher movement satisfaction scores than children from an activities-oriented physical education program. Beveridge (1973) used Tanner's scale with second graders to investigate relationships between movement satisfaction and motor creativity but found no relationship. Weith (1974) again used Tanner's scale with Grades 1 to 6 students. She found significant differences in movement satisfaction between second and sixth grade subjects but no significant differences between skill levels and sexes. Sabock (1974), using her own body movement image Q-sort, found that positive changes in body movement image were related to performance level of beginning college ice skaters.

Butcher (1977), using Nelson and Allen's scale, found significant differences between girls on three or more high school interschool teams and girls on no interschool teams. In a previous study on the differences between high school girls who elected physical education and those who did not, Butcher (1976a) indicated that confidence in physical ability, as measured by Sonstroem's (1974) Physical Estimation and Attraction Scales, was one of the main discriminators between the two types of girls. Snyder and Spreitzer (1976) and Greendorfer (1977) also reported that interscholastic and intercollegiate athletes respectively had much higher perceptions of their athletic abilities than did non-athletes.

Interest in Types of Activities. Holland (1973) has developed a theory of careers based on interests and competencies in six types of activities. He maintains that most persons can be categorized as one of six types: realistic, investigative, artistic, social, enterprising, or conventional. The essence of his theory is as follows:

> Each type is the product of a characteristic interaction between a variety of cultural and personal forces, including peers, parents, social class, culture, and the physical environment. Out of this experience, a person learns first to prefer some activities as opposed to others.

> Later, these activities become strong interests. Such interests lead to a special group of competencies. Finally, a person's interests and competencies create a particular personal disposition that leads him (her) to think, perceive, and act in special ways (Holland, 1973, p.2).

Holland (1973) provides a description of each of the six types of persons:

1. Realistic type: Has interests and competencies in the manual, mechanical, agricultural, electrical, and technical areas. Of particular interest to this study is that, according to Holland (1973), this type perceives himself/herself as having mechanical and athletic ability.

2. Investigative type: Has interests and competencies in the areas of science and mathematics.

3. Artistic type: Has artistic interests and competencies--language, art, music, drama, writing.

4. Social type: Has interests and competencies in human relations--interpersonal and educational competencies.

5. Enterprising type: Has leadership, interpersonal, and persuasive interests and competencies.

6. Conventional type: Has clerical, computation, and business system interests and competencies.

Sex Role Orientation. According to Chafetz (1974), the sex role is "a cluster of socially or culturally defined expectations that individuals in a given situation are expected to fulfil" (p.3). Certain behaviours are deemed more appropriate for males and others for females. Historically, these sex role expectations have encouraged physical activity participation for males but not for females. An example of these societal expectations can be found in Duquin's (1977a) study of elementary school textbooks. Children were 13 times more likely to see a vigorously active man than a vigorously active woman. The research on the image of the female athlete also indicates that participation in physical activity is not a totally acceptable aspect of the female sex role.

A few studies have investigated the sex role orientations of athletes and non-athletes. Contrary to their hypothesis, Snyder and Kivlin (1975) found that female athletes registered more traditional sex role responses than did non-athletes. Small (1973) and Del Rey (1977) obtained similar results.

Recent developments in social psychology have introduced the concept of psychological androgyny whereby individuals take on characteristics from both the feminine and masculine domains. A few researchers have examined the relationship between psychological androgyny and participation in sports and physical activity. Duquin (1977b) found female athletes to be very androgymous.

Myers and Lips (1978) administered Bem's (1974) Sex Role Inventory to female competitors in a national racquetball tournament and to competitors in local tournaments. The results for the national tournament indicated that a larger number of androgynous women as compared to traditionally feminine or masculine men competed in the tournament.

The participants in the local tournaments had been asked their reasons for entering, and were subsequently classified as competitive or non-competitive. Females in the competitive group tended to be androgynous or to be sex-typed more as masculine than feminine, while those in the non-competitive group tended to be feminine or near feminine (Chi square, $p < .001$).

Harrison (1978), however, found no significant relationship between psychological androgyny and degree of sport involvement for a sample of grade 6, grade 11, and university males and females.

Tomboyism. Studies of physical activity participation have devoted little attention to the concept of tomboyism. Hyde, Rosenberg, and Behrman (1977) reported that 63 percent of a sample of Grades 7 to 9 girls reported being tomboys currently. They also surveyed 74 non-college adult women, and 51 percent reported having been tomboys in childhood. Their conclusions were that tomboyism was statistically quite common and that there was little indication that it was abnormal.

Tomboyism has not been looked at directly in relationship to participation. Berlin (1974) and Balazs (1975) did report that national and Olympic champion performers had been tomboys.

Activity Preference. Activity preference is a variable somewhat related to tomboyism and is one which has not been examined closely. Orlick (1972) included it in his study and found that eight and nine year old boys preferred active, moving activities more so than non-participants.

Hyde et al. (1977) also indicated that 53 percent of their Grades 7 to 9 sample preferred active, outdoor games as compared with a combination of indoor games, sewing, cooking, and reading. Sixty-five percent of their adult sample preferred active, outdoor games to quiet, indoor games.

Menarchial Age. Menarche (time when a girl first begins menstruating) marks the onset of puberty, and with it comes changes in expectations for appropriate behavior. After puberty there are more rigid expectations for appropriate sex role behavior. Zoble (1972) suggests that as the female becomes interested in being desired by males, she de-emphasizes competition in academics and even more so in sports.

Menarchial age is an indication of maturity. Two researchers have examined effects of maturity on personal adjustment and popularity. Jones and Mussen (1958) found that early maturing girls, like boys, were better adjusted than their later maturing peers on TAT scores. Faust (1960) investigated developmental maturity as a determinant of prestige in adolescent girls. For Grades 7, 8 and 9 the most mature group consistently received the highest mean scores on prestige and on items significantly correlated with it. However, in Grade 6, the least mature girls, the prepuberal group, received the most favourable scores. This is contrary to the findings for boys where accelerated development is a sustained asset throughout the adolescent period. These findings could reflect a change of interests and values due to puberty. After puberty, most girls' interests change from "play" activities to more social adult activities. Those girls who had matured earlier would have a head start in these activities and might be accorded more prestige by their peers. However, in Grade 6 when the majority of girls were still prepubescent, girls who had matured beyond this point might be accorded less prestige.

Harris (1975), in her summary of research studies on the female athlete, states that the average age of menarche in the temperate climates of the world is between 12 and 14 with a range from 9 to 16 years. She suggests that the age of menarche may be different in athletes and non-athletes, but the research reported by her offers conflicting findings.

> Malina and others studied a group of women track athletes of college age and compared them to a group of women college physical education students. They were asked to indicate retrospectively their age at menarche to the nearest year and month, a process which certainly opens some possibility for error. The mean age at menarche for the non-athlete control group was 12.23 ± .30 years (range 10-15 years), while that for the 66 athletes was 13.58 ± .16 years (range 11-17 years). The difference was statistically significant. The mean age for the athletes was almost identical with that obtained by Erdelyi for Hungarian female athletes but this did not differ from the mean age for the Hungarian population as a whole. Astrand and others however, reported a mean age at menarche of 12.88 years (range 11 to 15 years) for Swedish girl swimmers, an average age slightly earlier than for the Swedish population generally (Harris, 1975, p.42).

Socializing Agents

Much of the research on socialization into sport has examined the socializing agents' element of Kenyon and McPherson's (1973) model. However, few of these studies have been devoted to adolescent girls as they actually go through the socialization process. Most research has been on college or Olympic male athletes and has asked these athletes to reflect back on their past experiences and influences.

Greendorfer (1978a) summarizes the empirical research on males:

> (1) Primary involvement begins during childhood; (2) The learning of the sport role of active participant is situationally influenced by significant others who teach and reinforce the specific role behaviors within specific social settings (e.g., the school is the major socialization agency, and coaches and peers are the most important significant others); (3) The influence of significant others appears to be sport specific; (4) Since influence is differential over time, a temporal factor may be involved in the nature of significant other influence (p.122).

Lewko and Greendorfer (1977) outlined sex differences in children's socialization into sport. However, few studies have examined female socialization into sport. Greendorfer (1974) examined intercollegiate athletes' perceptions of significant others' influences during three stages of their life cycles, childhood, adolescence, and adulthood. Peers were the major influence throughout each life-cycle stage with families being second during childhood and teachers/coaches being second during adolescence (Greendorfer, 1977b).

One of the few studies to examine girls as they were actually becoming involved, and not after they had been involved for a long time (usually at a highly competitive level) was the interview case study done by Kennedy (1975). All eight of the girls interviewed had mothers active in sports, had very positive attitudes toward sport, and were active themselves. The mothers' influence was greatest until junior high school (daughter usually in individual sport at the private club) when most girls developed their own interests (usually team sports at school). However, they maintained an interest in sport and felt sport participation was part of their developing sex role.

Kennedy (1975) maintained that friends had little influence on sporting interests but this seems to be negated by the switch from club, individual sports to school, team sports. There were similar feelings between the mothers and daughters about sports appropriate for girls and about being in favour of participation in competitive sports. Sibling influence seemed minimal although siblings seemed to be interested in similar sports. It is difficult to draw far-reaching conclusions with such a case study approach, but it does seem that an active mother does have a positive influence on the daughter's sport involvement. Also, it seems that girls with a good opportunity set (membership in a private club, facilities, lessons) will be interested and involved in sport.

Smith's (1976) study on Canadian teenage athletes at the

York University Sport Seminars also examined the socialization process as teenagers were becoming involved. He examined sex differences in involvement in sport and found that girls became involved in sport earlier than boys and experienced success earlier. Girls perceived greater encouragement from significant others, especially mothers, than did boys. Also, for girls, initial interest in sport came from the home, while school and peer group were the sources of boys' first involvement. Smith (1976) suggests this may be due to the non-traditional role for female sport involvement, which requires earlier and more sustained encouragement.

Greendorfer and Lewko (1978) compared the influence of family, peers, and teachers on the socialization of eight to thirteen year old girls and boys. Parents had more influence than siblings, and of the parents, the father had more influence for both boys and girls. For boys, all three socializing agents (father, peers, and teachers) were significant predictors of sport involvement with fathers having the highest coefficient. For girls, fathers were also the most influential. Peers were significant predictors, but teachers were not.

Other studies have examined the influence of the family alone as a socializing agent. Snyder and Spreitzer (1973) examined family influences on sport involvement of the general public and found that parents' interest in sports showed a consistent positive relationship with three dimensions of sport involvement--behavioural, affective, and cognitive.

There was also a tendency for the like-sexed parent to have more influence than the opposite-sexed parent, especially among the girls.

Malumphy (1970), in her study of female intercollegiate athletes from the National Golf and Tennis Tournaments, found that a large number of parents encouraged and supported the athletes (93 percent of the fathers and 83 percent of the mothers). Balazs (1975) had reported support and high expectations from parents, as had Snyder and Spreitzer (1976).

Role Models. Another aspect of socialization into sport is that of role models. These include models in close contact to the individual, such as parents, siblings, teachers, and friends, and models from professional, national, and international sports. For the first type of role model, Greendorfer (1974) found that males were much more influential in childhood, both sexes were significant in adolescence with the male slightly more so, and females were slightly more influential in adulthood. Both Snyder and Spreitzer (1976) and Malumphy (1970) indicated that competitive athletes' parents were interested in and participated weekly in activities themselves.

Little research has been done on the elite or professional athlete as a role model for girls. Gilbert and Williamson (1973) in an "informal study" taken for the purposes of their three-part Sports Illustrated series on Women in Sport, asked 100 high school girls to name ten male and ten female athletes in college or professional sports whom they admired or at least whose names they knew. "Nearly all could name ten male athletes but not a single girl could name ten prominent women athletes" (Gilbert and Williamson, 1973, p.96).

In Butcher's (1976b) study, 31 percent of Grade 4 girls as compared to 62 percent of the boys had a sports hero. Of the girls' sports heroes, all were male. Greendorfer (1974) examined athlete models of intercollegiate competitors and found that male athletes were the predominant role model in each of the three life cycle stages. Female athletes never represented a significant factor.

Sibling Sex Status. Sibling sex status and ordinal position have also drawn some attention from researchers interested in socialization into sport but few conclusive findings have been obtained. Portz (1972) outlined four conflicting theories and findings regarding sibling sex status in her review of the literature. She makes the tentative conclusion that girls with older brothers tend to be more tomboyish and more involved in physical activity. Landers (1970) found no significant sibling sex status or ordinal position differences between physical education and education majors. Sutton-Smith and Rosenberg (1970) indicated that males and females with brothers reported significantly more past sport participation in games of physical skills and strategy than males and females with sisters. However, Kennedy (1975) reported little difference in sporting interests and activities between those girls who had older brothers and those who had no brothers or younger brothers.

Much of the research on ordinal position has examined the relationship between birth order and participation in dangerous sports. Casher's (1977) findings were similar to several previous studies; firstborns tended to avoid high-harm sports and thirdborns were overrepresented in dangerous sports.

Social Class

McPherson, Guppy, and McKay (1976) indicated that sport and game involvement was related to the social class in which one was raised because this influenced the opportunities that were available to a child in terms of facilities, equipment, coaching, and reinforcement and significant others. They presented a review of the literature to date: generally participation was greater in higher social classes with a few individual exceptions, for example, boxing and minor hockey. Other researchers including Greendorfer (1978c) have found that types of sports were related to socio-economic status. Team sports participants tended to come from a lower class background while individual and dual sport participants had a higher social class status.

Continuation in Participation

Few studies have examined why participants would drop out of physical activities after having once been socialized into them. Orlick (1974) interviewed male and female dropouts.

Of the 60 "athletic dropouts" from 7 to 19 years of age, 50 percent reported they dropped out because of the emphasis on the program--the seriousness, lack of enjoyment, emphasis on winning and being the best. Seventeen percent reported the coach as a reason--leaves you out, criticizes, not fair; 21 percent reported conflict with general life pursuits; 10 percent, greater interest in other sports; and 2 percent, injury.

Several variables were included in the study which may be related to continuation in participation. These included satisfaction with physical education, attitude toward physical activity, and the "image of the female athlete". The literature on these variables will now be reviewed.

Satisfaction with Physical Education. Physical education classes are a common experience for most adolescent girls. For many girls they are the major source of their physical activity participation. Thus, it would seem that if girls had positive expectancies for or satisfaction with physical education, they would also have positive expectancies for physical activity outside of school. Hall (1974) did find that enjoyment of school physical education experiences was one of the two major determinants of activity level when younger.

The studies examining physical education have not looked at satisfaction with physical education but at more global attitudes toward physical education. The inventories used in the numerous studies have consisted mainly of statements about the value of physical education and physical activity. The literature has shown that most individuals tested have supported these values, with little discrimination between contrasting groups. Furthermore, little research has indicated whether these values are being realized in physical education classes.

The studies examining attitude toward physical education were reviewed by Butcher (1976a). The following variables had a positive relationship with favourable attitude toward physical education:

1. participation on athletic teams
2. degree of physical skill or ability
3. self rating of physical skill
4. level of physical fitness
5. enjoyment of physical education classes
6. choice of activities
7. liking of the physical education teacher

It would seem that students with good levels of physical skill and physical fitness had a positive attitude toward physical education. Also, positive experiences with physical education (enjoyment of the classes, choice of activities, and liking of the physical education teacher) were reflected in a favourable attitude.

Attitude Toward Physical Activity. There are several reasons why adolescent girls might want to participate in physical activity. An individual's attitude toward different reasons for participating in physical activity would give an indication of her expectancies for activity.

Kenyon (1968a) proposed a conceptual model of physical activity with six subdomains based on the perceived instrumentality of each subdomain. The six subdomains are outlined by Smoll, Schutz, and Keeney (1976):

> 1. A social experience: Activities whose primary purpose is to provide a medium for social intercourse.
>
> 2. Health and fitness: Activities characterized primarily by their contribution to improvement of one's health and physical fitness.
>
> 3. The pursuit of vertigo: Physical experiences providing, at some risk to the participant, an element of thrill through the medium of speed, acceleration, sudden change of direction, or exposure to dangerous situations.
>
> 4. An aesthetic experience: Activities perceived as possessing beauty or certain artistic qualities.
>
> 5. Catharsis: Activities which provide a release of frustration-precipitating tension through some vicarious means.
>
> 6. An ascetic experience: Activities which require long, strenuous, and often painful training and involve stiff competition demanding a deferment of many gratifications.

A seventh subdomain was added for the purposes of this study. The subdomain, physical activity for competition, includes activities whose primary purpose is competing to see which individual or team is the best.

Kenyon (1968b) derived scales for assessing attitude toward physical activity and tested high school students from Australia, Canada, England, and the United States. His conclusions were as follows:

> Attitude toward physical activity is a function of the perceived instrumental value associated with the activity in question. [It is also] a function of sex. Females possess a more positive attitude toward physical activity when it is perceived as a social experience, as health and fitness, as an aesthetic experience, and as catharsis, while males possess more positive attitudes than females toward physical activity perceived as the pursuit of vertigo, as an ascetic experience, and as chance (Kenyon, 1968c, p.3).

In a study on Grades 4 to 6 boys and girls, Smoll, Schutz and Keeney (1976) found a relationship between attitudes toward physical activity (measured by their adaptation of Kenyon's (1968b) inventory--the CATPA) and involvement in activities that reflected the six subdomains. However, attitudes were not related to level of performance in running, jumping, and throwing.

Butcher (1976a), in a study of the differences between high school girls who elected physical education and those who did not, found differences between the two groups of girls on the two subdomains, ascetism and competition.[1] The high school girls who did not elect physical education were unwilling to exert the effort necessary to compete seriously in sport and preferred unorganized, non-competitive physical activities. On the other hand, high school girls who elected physical education preferred organized competitive physical activities and were willing to exert the necessary effort.

Image of the Female Athlete. Several investigators have examined what people in society think about girls' and women's participation in physical activity. McGee (1956) and Harres (1968) found attitudes ranging from indecision to moderately favourable attitudes. However, these attitudes may be tempered by activities deemed appropriate for girls and women. Foreman (as reported by Felshin, 1974) conducted a survey of 75 sports and found only two (field hockey and ballet) were classified as essentially feminine. Fifteen were designated exclusively masculine and the majority of the remainder as primarily masculine. Sherriff (1969) and Harres (1968) found that individual sports were ranked as being more desirable for females than were team sports.

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[1] The subdomains were not measured by Kenyon's (1968b) inventory but by Sonstroem's (1974) inventory.

Snyder and Spreitzer (1973) also found different responses for team and individual sports participants on the question "Would participation in any of the following sports enhance a girl's/woman's feminine qualities?" The percentage of affirmative answers were swimming 67, tennis 57, gymnastics 54, softball 14, basketball 14, and track and field 13.

A more recent study (Kingsley, Brown, and Seibert, 1977) indicated the opposite. Non-athletes did not rate dancers and softball players any differently on social acceptability, while athletes rated softball players much higher than dancers.

Several investigators have measured the image of the female athlete, many using the semantic differential technique. Brown (1965) investigated perceptions of the "feminine girl" and several types of female athletes in different sports.

None of the sport roles were seen to be consistent with perceptions of the "feminine girl". Griffin (1972) found the profile of the woman athlete to be somewhat neutral. Girlfriend, mother, and housewife were more highly evaluated than the woman athlete by undergraduate students.

Berlin (1973) found that college students viewed the images of the ideal woman and the female athlete quite differently. The ideal woman was perceived as well-liked, good natured, and friendly, while the athletic woman was described as aggressive, enthusiastic, determined and persistent. Harrison (1978) also investigated perceptions of certain female roles and found that the role of nurse was perceived as the most favoured followed by the gymnast, the athlete, the swimmer, the lawyer, and the shot putter. The subjects' psychological androgyny or their degree of sport involvement did not significantly affect the way in which they perceived the various female roles.

Finally, several researchers have compared the attitudes of participants and non-participants toward the female athlete and have found, not surprisingly, that the participants were more favourable (Hall, 1972; Selby and Lewko, 1976; Fisher, Genovese, Morris and Morris, 1977; Kingsley, Brown, and Seibert, 1977).

Another approach to the study of the image of the female athlete has been to investigate athletes' own perceptions of their social acceptability and femininity. Malumphy (1970) found that half of the collegiate golfers and tennis players investigated felt that their feminine image was enhanced by their participation in their sport and only six percent felt it was distracted. Balazs (1975) also found that Olympic champions regarded themselves as attractive and desirable to the opposite sex. Snyder and Kivlin (1975) asked college athletes if they felt there was a stigma attached to women who participated in the sport they specialized in. There was a difference in affirmative responses between team and individual sports--basketball 54 percent, track and field 47 percent, swimmers and divers 38 percent and gymnasts 27 percent.

Kukla and Pargman (1976) interviewed female varsity and intramural athletes on their perceptions of athletic participation as being facilitative or debilitative to psychological growth. The varsity athletes cited more personal growth statements but did report more negative aspects of participation in the social area than did intramural athletes. Ninety-seven percent of both types of athletes also reported differences in perceptions between sport and social self. This would seem to indicate that athletes felt that athletic participation was facilitating personally but debilitating socially.

Aspirations at School. One way of tapping adolescent girls' perceptions of what activities are reinforced by society is to measure their aspirations at school. Coleman's (1963) classic study asked students how they would like to be remembered. Boys responded "athletic star", "brilliant student", and "most popular", in that order. Unfortunately, Coleman changed the wording of "athletic star" to "leaders in activities" for the girls, so comparisons are not possible for boys and girls. However, this change in wording is itself a comment on the value structure of girls perceived at the time. Friesen (1968) replicated Coleman's study on Canadian students but unfortunately combined the results for boys and girls together, making conclusions about girls impossible. Nevertheless, the results were 54 percent for outstanding student, 25 percent for athletic star, and 17 percent for most popular.

Buchanan, Blankenbaker, and Cotten (1976) performed a similar study with Grades 4 to 6 students. Seventy-eight percent of the girls wanted to make good grades, 12 percent wanted to be popular, and 10 percent wanted to be good at sports. In comparing popularity among the girls, the student-athletes were the most popular, followed closely by the athletes and then the students. In ranking what they believed made them popular, the elementary children ranked grades first, sports second, looks third, and money fourth.

Bratton's (1977) study in a Canadian junior high school reported that both the female athletes and non-athletes ranked being a good student above being a good athlete and being popular.

Buhrmann and Bratton (1977) investigated the status of athletes and non-athletes among Canadian high school girls. Female athletes received consistently higher status than non-athletes from their male and female peers as well as teachers.

Studies of Participation Correlates

To conclude the review of research on factors related to participation, studies examining participation correlates will be summarized. Several researchers have examined correlates of participation for elite competitive athletes. Berlin (1974) presents a very comprehensive review of the literature up to that date for intercollegiate, and national athletes. This includes descriptive characteristics, personality traits, motivational and other psychological factors. Balazs (1975) provided a detailed psycho-social study of 24 Olympic champions. The following attributes were characteristic of these athletes:

> Strong drive to excel, early goal setting and following through the original goals, positive self image, well-developed heterosexuality, family atmosphere where support was coupled with high expectations, main motivating force: parents and the coach (Balazs, 1975, p.271).

Few studies have examined factors related to adolescent girls' participation in physical activity. Snyder and Spreitzer (1976) investigated correlates of sport participation for interscholastic (high school) competitors by comparing athletes and non-athletes on several descriptive questions. The athletes' parents were slightly more interested in sports themselves and encouraged their daughters' participation. The athletes also received more encouragement from friends, teachers, and coaches.

The basketball athletes, but not the gymnastics or track athletes were more often called tomboys when growing up and perceived themselves as being less feminine than the non-athletes. All the athletes had much higher self reported athletic abilities and somewhat more positive body images. For all of these attributes, no statistical tests were carried out.

All of the above descriptions have focused on girls and women who have committed themselves to an intense, competitive level of participation. What about girls and women who participate in recreational activities? What factors are related to this recreational participation? Hall (1974) and Richardson (1974) examined dispositional, socialization, attitudinal and situational determinants of adult women's participation in physical recreation. They both concluded that situational determinants such as age, present involvement of family, and activity level when younger were most influential. However, this does not explain the causes for girls' participation when younger.

Hall (1976) concludes

> it seems certain that these unknown and unmeasured causes have their roots in vastly disparate sport socialization experiences among individuals, and until a good deal more is known and understood about this process of socialization into sport roles, it is pointless to continue seeking the explanation for differential participation among females in attitudinal and dispositional factors (p.185).

Chapter 3

THE INSTRUMENTS

The literature was reviewed to determine what instruments were available for measuring the various variables included in the study. Several points were taken into consideration in choosing the instruments to be included. They had to be appropriate for a five year age range. They had to be simple enough to be comprehended by Grade 6 students (age 11-12) and yet still appropriate for Grade 10 students (age 16-17). Because of the number of variables and hence instruments, shortness, consistency, and ease of answering were also prime considerations. Finally, reliability and validity of the instruments were important factors. The instruments selected as best meeting the various criteria are presented in Table 1.

The 13 instruments were combined into a 20-page questionnaire. The various instruments will be described briefly on the following pages along with their authors' reported measures of reliability and validity. In the case of new instruments, the procedures used in their construction will be outlined. The reliability and validity measures for all instruments obtained in this study will also be included. The placement of each instrument in the questionnaire will be noted

Table 1

Research Instruments

Variable	Instrument
General Interests	Holland's Self Directed Search
Sex Role Orientation	Bem's Sex Role Inventory
Self Esteem	Rosenberg's Self Esteem Scale
Tomboyism	Author Constructed Questionnaire Item
Activity Preference	Author Constructed Questionnaire Item
Movement Satisfaction	Nelson and Allen's Scale for Appraisal of Movement Satisfaction
Body Cathexis	Secord and Jourard's Body Cathexis Scale
Satisfaction with Physical Education	Author Constructed Satisfaction with Physical Education Scale
Attitude Toward Physical Activity	Simon and Smoll's Children's Attitude Toward Physical Activity Inventory
Image of Female Athlete	Semantic Differential
Physical Activity Participation	Author Constructed Questionnaire Item
Socialization Variables	Author Constructed Questionnaire Items
Situational Variables	Author Constructed Questionnaire Items

so the reader can refer directly to it, for example, Holland's Self Directed Search (Part IB of questionnaire). A copy of the final questionnaire is included in Appendix A (p.203).

A few minor changes were made in the wording of some items of the original instruments to make them easier to comprehend for the younger subjects. This mainly involved adding brief explanations or synonyms to certain difficult items. The changes to the original instruments are outlined in Appendix B (p.225).

HOLLAND'S SELF DIRECTED SEARCH

General interests were measured by the Activities portion of Holland's (1972) Self Directed Search (Part IB of questionnaire). The Self Directed Search consists of four sections--activities, competencies, occupations, and self-estimates. The total score on the four sections gives an assessment of the vocational interests of the subject and is used as a vocational counselling tool. The activities section consists of six scales which are purported to be measures of six interest dimensions--realistic, investigative, artistic, social, enterprising, and conventional (Holland, 1973). The scales were used in this study to assess differences in general interests.

The inventory consists of 11 items for each of the six interest dimensions. Subjects are asked to indicate whether they like or dislike each activity, and the score for each scale is derived by adding the number of like responses.

Holland (1972) clustered the items tapping each dimension together but for this study, they were intermixed to reduce response set.

Holland (1972) reported Kuder Richardson internal consistency coefficients for college women for each of the six scales of the activities inventory. He also reported test-retest reliability for high school girls after a three to four week interval. The test-retest reliability measures[2] and the internal consistency reliability measures[3] obtained in this study are also reported in Table 2. The alpha coefficients were lower in this study for three of the interest dimensions but all test-retest coefficients were higher than in Holland's (1972) analysis.

Although the activities scales were not tested separately for validity, Holland (1972) reported that the scales were highly correlated with the corresponding scales of the other three sections (competencies, occupations, and self-estimates) and suggested this was a measure of validity. As a means of examining construct validity in this study, the 66-item

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[2] The test-retest reliability for this study was measured using the data collected in the pilot study described in Appendix C (p.229). The variables were computed using the same procedures as for the final study (see pages 82 to 88) except that the total scores were not divided by the number of answered items, but by the total number of items in the instrument. The pretest and retest scores were correlated using SPSS program PEARSON CORR with pairwise deletion of missing data.

[3] Cronbach's standardized item alpha was calculated for the data collected in the final study. SPSS program RELIABILITY, model ALPHA, with listwise deletion of data, was used.

Table 2

Reliability of Holland's Self Directed Search

Scale	Holland's Coefficients Kuder Richardson	Holland's Coefficients Test-retest	Study Coefficients Cronbach's Alpha	Study Coefficients Test-retest
Realistic	.77	.63	.81	.85
Investigative	.75	.64	.75	.74
Artistic	.70	.60	.60	.67
Social	.53	.63	.41	.66
Enterprising	.75	.70	.56	.80
Conventional	.79	.54	.73	.81

Activities inventory was factor analyzed[4] to determine if the items could be sorted into meaningful factors. The first six factors derived were as follows: Realistic Dimension, Investigative Dimension, Conventional Dimension, Public Occasions, Social Dimension, and Reading. The items loading on each factor are detailed in Appendix D (p.237). The items factored into four of the six dimensions hypothesized for the inventory, demonstrating some degree of construct validity.

BEM'S SEX ROLE INVENTORY

Bem's (1974) Sex Role Inventory (Part IIA of questionnaire) was chosen to measure sex role orientation. It consists of 60 adjectives or phrases which have been classified as representing the "masculine", "feminine", and neutral dimensions (20 of each). The respondents are asked to indicate how true each adjective or phrase is of themselves by circling a number on a seven point scale ranging from (1) never or almost never true to (7) always or almost always true.[5]

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[4] SPSS program FACTOR, type PA2 (principal factoring with iteration) was used. This included varimax orthoganal rotation and pairwise deletion of missing data.

The androgyny (degree of possessing both masculine and feminine characteristics) score is obtained by subtracting the mean of the ratings for the masculine items from the mean of the ratings for the feminine items. Bem (1974) used a t-ratio for the difference but states it is almost identical (r=.98) to the simple difference score. Strahan (1975) indicated several reasons why the t-ratio was not a valid statistical method and maintained that the simple difference score was preferable.

Bem (1974) assigned subjects to one of four categories, androgynous, masculine, feminine, and undifferentiated, based on their difference scores. However, in 1977, she reported some discussion over which subjects to assign to the androgynous category and whether subjects who scored high in both masculinity and femininity, and subjects who scored low in both should be put into the same category. Bem (1977) urged investigators to analyze their data without categorizing individual subjects in any way. "Classifying subjects into categories, whether on the basis of a t-ratio or on the basis of a median split, loses valuable information about subjects' actual masculinity and femininity scores" (Bem, 1977, p.204). Therefore, for this study, the sex role scores were merely the difference scores with high negative scores representing an endorsement of "masculine" traits and high positive scores representing an endorsement of "feminine" traits.

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[5] The scale was changed to five points for this study to increase ease of answering.

A social desirability score can be derived from the inventory by summing the responses on the 20 neutral items, 10 of which are desirable and 10 undesirable. In Bem's (1974) study, both masculinity and femininity were correlated with social desirability (.19 to .38) while androgyny was not (.03 to -.10).

Bem (1974) reported analyses of reliability and validity for two college samples tested with the sex role inventory. Internal consistency measures (coefficient alpha) of .86 and .86 for the masculinity scale, .80 and .82 for the femininity scale, and .85 and .86 for the androgyny difference score were reported. Test-retest reliability was also calculated on university students after a four week interval to be .90 for the masculinity and femininity scores and .93 for the androgyny difference score.

The standardized alpha internal consistency coefficients for the present study were .82 for the masculinity scale and .75 for the femininity scale. The test-retest reliability coefficients were rather low--.60 for the masculinity scale,

.48 for the femininity scale, and .67 for the androgyny difference score. Perhaps the reading and comprehension abilities of the young subjects in this study were responsible for the low test-retest coefficients.

Bem (1974) demonstrated construct validity for the separate masculinity and femininity scales by correlating the two scales. Male subjects from the two college samples had correlations of .11 and -.02, while female subjects had correlations of -.14 and -.07. Bem suggested that these low correlations indicated that the scales were tapping two different dimensions. The same correlation for this study yielded a coefficient of .25, indicating that the masculinity and femininity scales were not such separate dimensions for a sample of adolescent girls. The entire inventory was also factor analyzed in this study to examine construct validity in a different way. The first factor was definitely a femininity factor and the second a masculinity factor. The factor loadings are included in Appendix D (p.237).

ROSENBERG'S SELF ESTEEM SCALE

Rosenberg's (1965) ten-item Guttman scale (Part IIB of questionnaire) was used to measure self esteem. Its shortness and ease of administration were important considerations for this study. Being a Guttman scale, the inventory ranks people along a single continuum ranging from those who have very high to those who have very low self esteem. The ten items have been divided into six scales based on the Guttman scaling technique. Thus, each subject receives a self esteem score between 0 and 6, depending on the number of scales for which they received positive scores. Positive scores indicate low self esteem.

The internal consistency reliability of a Guttman scale is measured in terms of reproducibility. Rosenberg (1965) reported the reproducibility of the scale as 92 percent. Another measure of reliability for a Guttman scale is scalability which "insures a unidimensional continuum by establishing a pattern which must be satisfied before the scale can be accepted" (Rosenberg, 1965, p.16). The coefficient of scalability of 72 percent, reported by Rosenberg (1965), satisfied the Guttman criteria for scaling.

The self esteem data in this study were subjected to the same reliability analyses[6] as Rosenberg's data, but received much lower coefficients. The coefficient of reproducibility was a respectable 87 percent but the coefficient of scalability was only 40 percent. The six scales did not fall into the correct order of difficulty, as Scales 2 and 4 were reversed. Again, comprehension may have been a factor affecting the scalability of the scale. The Guttman analysis is presented in Appendix D (p.237).

Extensive attempts have been made to validate Rosenberg's Self Esteem Scale, especially for construct or trait validity by correlating it with depression scales, psychophysiological indicators, and peer group reputation. Numerous other investigators have used this scale and many have shown their own evidence of reliability and validity.

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[6] SPSS program GUTTMAN was used.

TOMBOYISM

An item (Part IIB:11 of questionnaire) was included at the end of Rosenberg's Self Esteem Scale to measure the subjects' perceptions of being a tomboy when younger. The item used a four-point Likert scale ranging from strongly agree to strongly disagree to be consistent with Rosenberg's Self Esteem Scale.

ACTIVITY PREFERENCE

The item (Part IIB:12 of questionnaire) measuring activity preference was patterned after Orlick's (1972) interview questions on active play versus quiet play. "I would rather do quiet, still activities than active, moving activities". This item also used a four-point Likert scale and was placed at the end of Rosenberg's Self Esteem Scale. The above two variables were included in the questionnaire after the pilot study, so no test-retest reliability was measured.

NELSON AND ALLEN'S SCALE FOR THE APPRAISAL OF MOVEMENT SATISFACTION

Movement satisfaction was measured by Nelson and Allen's (1970) 50-item Scale for the Appraisal of Movement Satisfaction (Part III of questionnaire). This instrument uses the Likert scaling technique where respondents are asked to indicate the direction and strength of feeling they have about each item by circling a number on a scale from 1 to 5. Nelson and Allen (1970) used a scale from "have strong negative feelings" to "have strong positive feelings". This research used the same satisfaction scale as Secord and Jourard's Body Cathexis Scale to maintain some consistency in answering the long questionnaire. A total movement satisfaction score is obtained by summing the responses for each individual on the 50 items and dividing by 50.

Nelson and Allen (1970) reported a Kuder Richardson reliability of .95 for the total scale. Cronbach's alpha internal consistency coefficient for this study was .94, the test-retest coefficient was .66, and the split-half coefficient, corrected by the Spearman Brown formula,[7] was .89.

No mention is made of validity by Nelson and Allen. However, Butcher (1977) performed an analysis of the scale which demonstrated some degree of criterion-related and construct validity. The total movement satisfaction score was significantly different for girls on several high school interschool teams as compared to students on no interschool teams, suggesting criterion-related validity by contrasted groups. A factor analysis was also performed on the 50 items and revealed three distinct factors: physical ability in sports, confidence or consciousness in everyday movement, and rhythmical movement to music. Furthermore, girls competing in gymnastics, girls competing in team sports, and girls not competing in any sport scored differently on each of these three factors, suggesting a degree of construct validity.

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[7] Split-half reliability was calculated using SPSS program RELIABILITY, model SPLIT.

A factor analysis was performed on the data from this study (details in Appendix D, p.237) and the same factors appeared as in the 1977 study. An attempt was also made to examine criterion-related validity by correlating the total movement satisfaction score and the movement factor 1 (satisfaction with sports skills) score with the physical education teachers' rating of the subjects' physical ability relative to the average for that age. The coefficients were .29 and .45 respectively, indicating a low relationship. For some reason the subjects' satisfaction with their movement did not correlate highly with their teacher's rating of their physical ability. The above two scores were also correlated with an individual item, "my skill in comparison with others", (item IV:14 of Satisfaction with Physical Education Scale), and the coefficients were .49 and .56 respectively.

SECORD AND JOURARD'S BODY CATHEXIS SCALE

Body cathexis, or the degree of satisfaction or dissatisfaction with the various parts or processes of the body, was measured by Secord and Jourard's (1953) Body Cathexis Scale (Part IV of questionnaire). This frequently used instrument consists of 46 parts or processes of the body for which respondents must indicate the degree of satisfaction or dissatisfaction by circling the numbers from 1 to 5 on the following scale:

1. Have strong negative feelings against and wish change could somehow be made
2. Don't like, but can put up with
3. Have no particular feelings one way or the other
4. Am satisfied
5. Consider myself fortunate.

Three of the items were deleted for this study (elimination, sex activities, distribution of hair over body) so not to offend any students, teachers, or parents. A total body cathexis score is obtained by summing the ratings for each individual on the 43 items and dividing by 43.

Secord and Jourard (1953) reported a split-half reliability, corrected by the Spearman Brown formula, of .83 for female adults and .78 for male adults. The split-half coefficient for this study was .91 and the internal consistency coefficient was .93. The test-retest reliability coefficient was again fairly low at .58.

Secord and Jourard (1953) make no mention of validity. Two methods were used in this study to examine the validity of the body cathexis scale. The factor analysis produced several definable factors: Body Features, Body Size, Facial Features, and Body Processes (details in Appendix D, p.237).

The body cathexis score was also correlated with a question on overall satisfaction with the body (Part V:24 of questionnaire). The two scores correlated at .45, indicating a low relationship between the two items.

SATISFACTION WITH PHYSICAL EDUCATION SCALE

Satisfaction with the subjects' present physical education program was measured by a Satisfaction with Physical Education Scale (Part V of questionnaire) constructed by the author. The scale was designed to measure satisfaction with specific aspects of physical education programs. It was felt that this would provide more valuable information than an agreement or disagreement with values held for physical education.

The pool of statements for the physical education questionnaire was derived from several sources:

1. Variables found in the literature which affected attitudes toward physical education

2. Variables from the literature which high school girls and college women considered to be unattractive aspects of physical education

3. Variables included in other physical education attitude inventories (Wear, 1951, 1955; Kappes, 1954; Kneer, 1956; Adams, 1963; Edgington, 1968)

4. Criticisms of physical education given by high school girls

5. Variables felt to be important by the author.

Butcher (1976a) had used most of the same items in previous research on elective physical education for high school girls, with slight differences in wording. There were significant differences ($p < .05$) between a group that had elected physical education and a group that had not for 12 of the items in the 1976 scale. This is an indication of individual item validity through the use of contrasted groups.

Test-retest reliability in Butcher's (1976a) study was calculated by determining the percentage of the 14 subjects in the pilot study who responded the same way on the two testing sessions, that is, subjects who answered false both times and subjects who answered true both times. For those items included in the present scale, the average percentage of agreement after a 15 day interval was 79.5 percent, indicating that 79.5 percent of the subjects answered the items in the same way for both testing sessions.

The present Satisfaction with Physical Education Scale consisted of 19 items and the subjects were required to respond using the same five-point Likert scale as in the movement satisfaction and body cathexis instruments. A total satisfaction with physical education score is obtained by summing the responses on the 19 items and dividing by 19.

The new 19-item scale was examined for reliability and validity. The test-retest reliability coefficient derived in this study was .47 and the internal consistency coefficient was .86.

The same pattern occurred for this author-constructed instrument as for the other more established instruments, that is, good internal consistency coefficients but low test-retest coefficients. A plausible reason may be the reading and comprehension skills of the subjects. The total satisfaction with physical education score was correlated with two other items in an attempt to examine criterion-related validity. The correlation with the physical education teachers' subjective rating of attitude in physical education (scale included in Appendix E, p.245) was only .28. This was a poor choice of criterion against which to rate the scale, as the subjects' satisfaction with physical education and the physical education teachers' rating of attitude in physical education did not appear to be related. The correlation with the single item on overall satisfaction with physical education was higher at .56.

SIMON AND SMOLL'S CHILDREN'S ATTITUDE TOWARD PHYSICAL ACTIVITY INVENTORY

Simon and Smoll's (1974) instrument for assessing children's attitudes toward physical activity (Part VI of questionnaire) was used to measure attitude toward six dimensions or subdomains of physical activity:

1. As a social experience
2. For health and fitness

3. As the pursuit of vertigo
4. As an aesthetic experience
5. As catharsis
6. As an ascetic experience

A seventh scale was included in the present research to measure attitude toward physical activity for competition.

The CATPA is based on Kenyon's (1968a) conceptual model for physical activity and is very similar to his (1968c) semantic differential ATPA scales. However, the descriptions of each subdomain of physical activity located in the boxes at the top of the scales have been altered to make them better understood by children in Grades 4 to 6. Four of the adjective pairs (good-bad, nice-awful, happy-sad, clean-dirty) are identical in both the CATPA and the ATPA, and the other four have similar meanings:

CATPA	ATPA
of no use - useful	worthless - worthwhile
not pleasant - pleasant	unpleasant - pleasant
sweet - bitter	sweet - sour
steady - nervous	relaxed - tense

A score for each subdomain of physical activity is computed by summing the ratings for each of the eight adjective pairs.

Simon and Smoll (1974) reported Hoyt reliabilities for Grade 6 girls for each of the original six scales of the CATPA. Kenyon (1968c) also reported Hoyt reliabilities for Grade 10 and 12 boys and girls combined for the ATPA. Both sets of reliabilities are included in Table 3, along with the standardized alpha coefficients and the test-retest coefficients for the present study. Again the test-retest coefficients are very low but are not that much lower than the original researchers.

Table 3

Reliability of Attitude Toward Physical Activity Scales

Scale	Original Hoyt Reliability CATPA	ATPA	Kenyon's Test Re-test	Present Study Alpha Reliability	Test-Retest
Social	.82	.78	.54	.76	.52
Health and Fitness	.84	.80	.41	.78	.34
Pursuit of Vertigo	.86	.85	.53	.74	.30
Aesthetic	.82	.87	.48	.85	.36
Catharsis	.86	.85	.50	.82	.42
Ascetic	.81	.85	.63	.74	.29
Competition	--	--	--	.84	.55

Kenyon (1968c) compared the Likert and semantic differential approaches for measuring attitude toward physical activity and concluded that "the semantic differential approach would be best for assessing attitude since it was quicker, more efficient, and yielded higher reliability coefficients than the Likert-type inventory (p.13)".

Neither Simon and Smoll nor Kenyon reported any validity measures for their semantic differential scales. Kenyon (1968b) had examined criterion-related validity on his Likert scale by comparing responses on each subdomain between groups ranking particular activities high and low, and had found it to be satisfactory. Construct validity had also been demonstrated through his (1968a) paper on a "conceptual model for characterizing physical activity", and content validity had been shown by operationally defining the universe of content for each of the six subdomains.

IMAGE OF THE FEMALE ATHLETE

The subjects' perceptions of the "image of the female athlete" (Part V of questionnaire) were measured using the semantic differential technique. The eight adjective pairs used in Simon and Smoll's Children's Attitude toward Physical Activity Inventory were used again to maintain consistency. They had been found to be suitable for Grade 4 to 6 children (Simon and Smoll, 1974). The scale was included at the end of the seven scales of the CATPA with no separate identification or instructions. The "image of the female athlete" score is obtained by summing the ratings for each of the eight adjective pairs.

The test-retest coefficient of reliability derived in this study was .50 and the internal consistency coefficient was .86.

A summary of the original authors' reliability measures and the measures derived in this study for all of the preceding instruments are included in Table 4. The internal consistency coefficients are quite similar in both cases. The test-retest reliability coefficients are somewhat lower in the present study except for the six interest dimensions of Holland's Self Directed Search. Two of the original authors (Secord and Jourard, Nelson and Allen) did not report test-retest reliability.

PHYSICAL ACTIVITY PARTICIPATION

Physical activity participation was measured by six variables. The questionnaire items were constructed by the author (Part VII:1-3 of questionnaire):

1. Number of interschool teams
2. Number of intramural activities
3. Number of community organized activities

In addition, the subjects were asked to list the names of the school teams on which they competed and the names of the organized activities in which they participated, as a check on the accuracy of the responses and for descriptive information. The differences between these three activities were carefully explained to the girls when they were completing the question.

4. Total number of activities: The subjects listed all activities they participated in during three different seasons:
    a. Spring/fall (warm weather--students in school)

Table 4

Reliability of Instruments

Instrument	Original Author's Test-Retest	Pilot Study's Test-Retest N = 61	Original Author's Internal Consistency	Final Study's Internal Consistency	Sample N for Internal Consistency
Holland's S.D.S.					
Realistic	.63	.85	.77	.81	554
Investigative	.64	.74	.75	.75	554
Artistic	.60	.67	.70	.60	554
Social	.63	.66	.53	.41	554
Enterprising	.70	.80	.75	.56	554
Conventional	.54	.81	.79	.73	554
Bem's Sex Role					
Masculinity	.90	.60	.86	.82	440
Femininity	.90	.48	.81	.75	440
Androgyny	.93	.67	.8	-	-
Body Cathexis (Split half)	-	.58	- .83	.93 .91	472 472
Movement Satisfaction (Split half)	-	.66	.95 -	.94 .89	480 480
Satisfaction with Phys. Ed.	-	.47	-	.86	438
C.A.T.P.A.					
Social	.54	.52	.82	.76	642
Health	.41	.34	.84	.78	646
Thrill	.53	.30	.86	.74	638
Beauty	.48	.36	.82	.85	633
Release	.50	.42	.86	.82	640
Training	.63	.29	.81	.74	632
Competition	-	.55	-	.84	628
Image of Female Athlete	-	.50	-	.86	622

b. Summer holidays

c. Winter

Before the girls began listing activities, the concept of physical activity was explained and the girls were asked to give examples.

5. Average hours per day: The subjects were asked to estimate how many hours each day they participated in some form of physical activity. They were told to estimate for the spring/fall season only, on a typical school day.

6. Frequency of participation in favourite physical activities: The subjects listed their four favourite activities and indicated how frequently they participated in each by circling the appropriate number.

Secondary physical activity participation was measured by Part VII:5 of the questionnaire. The subjects were asked to indicate how frequently they attended a live sports event, watched sport on television, listened to sport on the radio, and read about sport in newspapers and/or magazines. This question is similar to items found in McPherson's (1972) study on the sport consumer.

SOCIALIZATION VARIABLES

The literature outlines several variables which have been associated with socialization into sport. However, because of the nature of the study (a survey of a large number of girls on a large number of variables) the socialization variables in the study were limited to four:

1. Significant others' participation in physical activity
2. Significant others' encouragement for physical activity
3. Mother's socialization influence on participation
4. Father's socialization influence on participation.

This information was obtained through questions 6 to 10 of Part VII. For questions 6 and 9, nine significant others were listed and the subjects were asked to check the box which best represented their significant others' participation in physical activity and encouragement for physical activity. Questions 7, 8, and 10 were questions tapping parental socialization influence:

1. Participation in physical activity with daughter
2. Viewing of daughter participating in physical activity
3. Athletic aspirations for daughter.

These questions were patterned after similar questions in McPherson's (1972) and Orlick's (1972) studies. Some additional descriptive information was obtained in question 11 on role models, and in question 12 on one aspect of opportunity set, amount of sports equipment owned.

SITUATIONAL VARIABLES

The questions requesting personal information were placed at the end of the questionnaire (Part VIII) as recommended by social survey texts. The following variables were included:

1. Grade
2. Age
3. Menarchial age
4. Parents' education
5. Parents' occupation: to determine socio-economic status
6. Religion
7. Number of brothers and sisters: to determine sibling sex status and ordinal position
8. Height and weight: to determine body composition
9. Place of birth[8]
10. Ethnic background

DESCRIPTIVE INFORMATION

Some items were included in the questionnaire to provide additional descriptive information and were not intended to be included in the statistical analysis:

1. Rank of Interests. The first question of the instrument package attempted to ascertain the place of sports (physical activity) in the value hierarchy of each subject. The question was simply a ranking of activities in order of

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[8] The questions requesting information on variables 9 and 10 were included in year 2 of the study. The last page of the year 2 questionnaire containing these questions is included in Appendix A (p.).

preference. The author tried to choose items that would be of interest to adolescent girls. To assist in the ranking of the items, each subject was given a deck of twelve cards with the items printed on them. The subjects sorted out the cards and placed them in their order of preference. Once the cards were sorted in order, the girls put the appropriate number beside each item on the questionnaire. This method seemed to greatly assist in the ranking of the items. The question was also intended to be an enjoyable question to answer, in order to capture the subjects' interest for the remainder of the questionnaire.

2. Popularity. Question 2 of Part I of the questionnaire was included to determine the subjects' aspirations while at school. It was another measure of the value hierarchy of the subjects and where sports fit into that hierarchy. Question 3 asked the respondents to rank five items to determine their perception of what made them popular with their friends. Both questions were derived from Buchanan et al's (1976) study on popularity factors in elementary school children, Grades 4 to 6. They kept the questionnaire and directions simple due to the age of their subjects, an important consideration for this study as well. The questions also are similar in nature to Friesen's (1967) and Coleman's (1963) studies on high school students. These questions were placed behind the rank of interests question because they used the same ranking method of answering. Also, these items were placed at the

beginning of the instrument package to prevent the following questions on physical activity from influencing the answers to these questions.

3. Open-ended Questions. Several open-ended questions on physical education and physical activity were included in the questionnaire as another means of tapping the subjects' feelings about these two areas. Three questions about physical education were placed after the Satisfaction with Physical Education Scale and eight questions about physical activity were placed after the questions on physical activity participation.

ORDER OF PRESENTATION OF INSTRUMENTS

The order of presentation of instruments was important in obtaining the most accurate information from the respondents and in disguising the exact purpose of the research. The questionnaire was titled "Survey of Student Interests" and the respondents were told that the author was interested in finding out about junior and senior high school girls' interests. The physical activity instruments were included toward the end of the questionnaire package so as not to influence the answers to the other inventories.

The movement satisfaction, body cathexis, and physical education instruments were included one after the other because of the identical instructions and methods of responding. Also, the image of the female athlete scale was included in Part VI with the CATPA because both used the semantic differential response.

The questionnaire was prepared for keypunching directly by indicating the items to be included on each data card and the spaces where they were to be punched. The number of each data card was included in a box at the beginning of each instrument. The four blank boxes were reserved for the grade and case number of each subject. These were filled in during testing and were keypunched to identify each card. A few general instructions were included at the beginning of the questionnaire. These were explained to the subjects before they began the questionnaire. Finally, the questionnaire was divided into two separate sessions with individual page numbering for each session.

Chapter 4

METHODS AND PROCEDURES

THE SAMPLE

The Population

The population for the study consisted of all girls in Grades 6 to 10 of the Edmonton Catholic School District. Table 5 gives the number and percentage of girls in each grade of the population. A sampling fraction of 25 percent for the Grade 6 sample and 10 percent for each of Grades 7 to 10 was proposed, making samples of 275 girls in Grade 6 and 125 in each of the other grades. Since the Grade 6 sample is to be retested in a five year longitudinal study, it was considerably larger to allow for attrition.

Table 5

Population of Study

Grade	Number in Population	% of Total Population	Proposed Size of Sample	% of Grade Population
6	1105	18.5%	275	25%
7	1156	19.4%	125	10.8%
8	1234	20.7%	125	10.1%
9	1177	19.7%	125	10.6%
10	1299	21.8%	125	9.6%
Total	5971	100.0%	775	

Selecting the Schools

The sample for the study was selected in two steps--random selection of clusters or schools, and random selection of subjects within schools. Clustering of schools was used in the study to reduce the testing and travelling time. Eighty-two Catholic schools were located throughout the City of Edmonton and it would not have been feasible to select subjects randomly from each of these schools. A few of the elementary schools had very small enrolments in Grade 6. Therefore, only schools that contained at least ten girls in Grade 6 were included in the sampling frame, since it would have been too time-consuming to spend two hours in a school for less than ten subjects. The five schools included in the pilot study were excluded from the sampling frame for the final study.

In the Edmonton Catholic School District there are five types of schools that contain Grades 6 to 10 students:

1. Elementary--Grades 1 to 6
2. Elementary-junior--Grades 1 to 9
3. Junior high--Grades 7, 8, 9
4. Junior-senior high--Grades 7 to 12
5. Senior high--Grades 10 to 12.

Each type of school was represented in the sample. Time was the prime consideration in choosing the number of schools to be surveyed. It was calculated that 19 schools could be surveyed in a month of continuous testing. These 19 schools were arbitrarily divided among the five types of schools as outlined in Table 6.

Table 6

Sample of Schools from Edmonton
Catholic School District

Type of	Number in Population[a]	Number in Sample
Elementary	24	6
Elementary-junior	27	7
Junior	3	2
Junior-senior	2	2
Senior	4	2
Total	60	19

[a] Excluding schools with less than ten girls in Grade 6, and pilot schools.

The sampling of the schools was done using a random number table. The schools in each of the five types were numbered consecutively and then the schools corresponding to the random numbers appearing were selected.

Selecting the Subjects

The second step in the sampling procedure for the study was the selection of the subjects. All the girls in Grade 6 in the 13 schools selected (six elementary and 7 elementary-junior schools) were included in the sample. After scanning the enrolment figures, it was estimated that there would be an average of 21 girls in Grade 6 in each school, accounting for the 275 subjects required for the Grade 6 sample (13 x 21 = 273).

The number of subjects to be selected in Grades 7 to 9 was calculated to be between 10 and 15, depending on the number of schools supplying that grade. One hundred and twenty-five subjects were required in each of those three grades. The grade 10 sample came from only four schools. Therefore, 20 subjects were selected from each junior-senior high school and 45 subjects from each senior high school to meet the target sample of 130 subjects.

A random number table was used for the sampling of the required number of subjects in Grades 7 to 10. The sampling frame was the class lists for the grades in each school. The names in each grade were numbered consecutively and the required number of subjects selected using the random number table.

A few problems were encountered in obtaining the sample from three of the schools. One of the junior high schools would only allow a class of Grade 7 girls to be tested and not the Grade 8 and 9 girls. The principal felt there would be too much disruption of classes. Therefore, the Grade 8 and 9 samples were less than projected. No sampling was allowed for Grade 10 in the two senior high schools, again because of disruption of classes. The principals in both schools would only allow two physical education classes to be tested rather than a sample of all Grade 10 girls in the schools. However, the author was assured that the girls were assigned to physical education classes at random.

A few of the schools had limited enrolments in Grades 6 to 9 and could not supply the target number of girls in each grade. This was particularily noticeable in Grade 6 where only three of the 13 schools selected had the estimated average enrolment of 21 girls. Hence, the sample selected (213) was well below the target number (275). For the schools with limited enrolments in Grades 7 to 9, all the girls in those particular grades were used as subjects. Table 7 outlines the sample selected for the study from each of the 19 schools.

A summary of the procedures for selecting the sample follow. For the Grade 6 sample, all elementary and elementary-junior schools in the Edmonton Catholic School District were randomly sampled and all Grade 6 girls enrolled in those schools were selected. For the Grade 7, 8, and 9 samples, and the Grade 10 sample in the two junior-senior high schools, schools were first randomly selected, and then 10 to 20 girls in those schools selected. For the Grade 10 subjects in senior high schools, the schools were randomly selected and then two physical education classes from each school were surveyed.

Subjects Completing Survey

Year 1 of the survey was completed by 94.9 percent of the subjects selected into the sample. In year 2, 82.6 percent of the original sample (696) and 86.0 percent of the

Table 7

Sample Selected by School

School Type	School Name	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Elementary	Father Lacombe	19					19
	St. Thomas Aquinas	28					28
	St. Anne	14					14
	Father Leo Green	27					27
	St. Bernadette	15					15
	St. Andrew	9					9
Elementary-Junior	St. James	19	19	13	15		66
	St. Clare	7	10	15	12		44
	Mount Carmel	6	12	8	12		38
	St. Alphonsus	14	10	11	13		48
	Sacred Heart	19	10	15	10		54
	St. Nicholas	22	11	10	12		55
	St. Patrick	14	11	8	13		46
Junior	St. Cecilia		16	11	4		31
	St. Philip		15				15
Junior-Senior	J.H.Picard		18	10	9	21	58
	Louis St. Laurent			10	10	10	30
Senior	Archbishop McDonald					50	50
	Austin O'Brien					49	49
Total		213	132	111	110	130	696

subjects completing the survey in year 1 (661) were retested. Table 8 summarizes the sample selected and the sample collected for year 1 of the study.

Table 9 summarizes the sample completed for year 2 of the study. The first percentage column indicates the percentage

Table 8

Percentage Response Rate--Year 1

Grade	Sample Selected	Sample Collected	Percent Collected
6	213	207	97.2%
7	132	128	97.0%
8	111	102	91.9%
9	110	104	94.5%
10	130	120	92.3%
Total	696	661	94.9%

Table 9

Percentage Response Rate--Year 2

Grade	Sample Collected Year 2	Percent of Sample Selected	Percent of Sample Collected Year 1
7	181	85.0%	87.4%
8	115	87.1%	89.8%
9	90	81.1%	88.2%
10	82	74.5%	78.8%
11	107	82.3%	89.2%
Total	575	82.6%	87.0%

of the original sample selected and the second column indicates the percentage of the completed sample from year 1.

Eighty-six subjects from the original sample of 661 did not complete the questionnaire in the second year of the study. Sixty-two of those subjects could not be contacted for various reasons: moved out of Edmonton (29 subjects), had withdrawn (15 subjects), were truant (12 subjects), or were ill and/or hospitalized (6 subjects). Twelve subjects were contacted by mail and did not return the questionnaire. The remaining 12 subjects did not complete the second session of the questionnaire and had to be dropped from the analysis.

COLLECTION OF DATA

Year One of Study

Permission was obtained from the director of instructional services of the Edmonton Catholic School District to conduct the research in the schools of the district. The principals of the 19 schools selected into the sample were contacted by the instructional services office to inform them of the study and to request their co-operation. A letter was sent by the author to each of the principals giving further details of the study and informing them that the author would be contacting them to arrange testing times. A copy of the letter is included in Appendix F (p.247). The principals were contacted by telephone, and times were arranged for conducting the survey.

The questionnaire required approximately two one-hour sessions for completion, so two appointments were necessary for each school. Almost all testing sessions were within one to two days of each other. Because of the large number of subjects in the elementary-junior, junior-senior, and senior high schools, the subjects were tested in two separate groups of about 25 girls each. There were 30 testing sessions for each half of the questionnaire, making a total of 60 sessions in year 1 of the study. The author collected the data over a four week time period with an average of three testing sessions per day.

Upon arrival at each school, the author introduced herself to the principal and answered any questions that were still unanswered. In the schools that required sampling of the students, the principals were asked to supply a list of the names of all girls in the grades concerned. In most cases, the sampling was done immediately prior to the testing and the girls selected were asked to report to the testing room via the public address system. However, for three of the schools, the principals requested that the sampling of the names be done prior to the testing days, so that the teachers could be informed which girls would be away from regular classes. This was done to accommodate the principals. On the whole, the principals were very co-operative and supportive of the study. For the elementary schools and the two senior high schools where an entire class of girls was involved, the teachers had been informed of the testing beforehand and the girls knew where to report for the testing.

All of the testing was done during regular school hours in classrooms or libraries where the girls had tables or desks to write on. Individual tables or desks were requested for each girl to minimize talking during the survey, and for the most part this was the case. Quiet control was maintained throughout the testing. The girls were discouraged from talking to each other to minimize outside influences on answering the questionnaire.

At the first session with each group of students the author explained the purpose of the study and asked for their co-operation. The students were told that it was a study of girls' interests and attitudes, and of how these might differ with age from Grade 6 to Grade 10. For each part of the questionnaire, the instructions were carefully explained with the help of a large poster and an example. The questionnaire was completed one instrument at a time. Students who finished an instrument early were asked to wait for the instructions and an example of the next instrument before proceeding. The students were encouraged to ask questions and the author was constantly answering questions as the girls worked. Every effort was made to ensure the cooperation of the girls and the author feels that the testing sessions were very successful in that regard.

The author was present for all of the testing sessions in all of the schools and tried to be as consistent as possible in her approach and explanations. The physical education consultant with the Edmonton Catholic School District was present for some of the testing sessions and helped answer the students' questions. She had been well briefed on the questionnaire and its items and gave explanations consistent with the author's. For all of the testing sessions except four (two schools), teachers from the schools were not present in the room. The girls were assured that their answers would remain confidential and that their questionnaires would be anonymous.

A case number was placed on each questionnaire to ensure that the two halves of the questionnaire would be analyzed together and to identify the subjects for the next year's testing sessions. A careful list of the names in each grade for each school was made with the corresponding case number beside it. This procedure and the reason for it were explained to the subjects with another assurance of confidentiality. After the second testing session for each school, the questionnaires were checked against the list of names and case numbers to tabulate exactly how many subjects had completed each half of the questionnaire and to recheck the case numbers.

At some point during the two testing sessions in each school, the physical education teacher was approached and asked to supply some information that would be used in testing the validity of two of the questionnaire instruments. They were asked to rate each subject's attitude in the physical education class and their physical ability or skills, using a five point scale. The scale and the form used are included in Appendix E (p.245).

Year Two of Study

An attempt was made to locate the 661 subjects who had completed the survey in year 1 of the study. The principals of the original schools were contacted to determine which subjects were still enrolled in the same schools. The letter sent to them is included in Appendix F (p.247). Most of the subjects had remained in the same schools. However, the Grade 6 subjects from the elementary schools and the Grade 9 subjects from the junior high schools had transferred to new junior high schools and senior high schools respectively. For the most part, the principals of their former schools knew where the subjects had transferred. If they did not, the board office of the Edmonton Catholic School District was contacted, and the girls' names searched on their master enrolment list.

The principals were also very helpful in providing information about which subjects had moved out of the city, had withdrawn, were truant, or were ill and hospitalized. Sixty-two girls or 9.4 percent of the sample could not be contacted for the above reasons.

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The Edmonton Public School System was contacted about girls who had withdrawn from the Catholic system, to see if they had transferred to the public system. Ten subjects were located in this way. Their addresses were obtained and the questionnaire was mailed to them with a covering letter and a stamped, self-addressed envelope (copy in Appendix F, p.247). Six of these subjects returned the questionnaire. During the actual testing sessions in the Catholic schools, the subjects were asked if they knew the whereabouts of missing subjects. A few girls were located in this way.

The principals had some difficulty in contacting some of the subjects who had transferred to new senior high schools because of the size of the institutions. As a result, 28 of the high school subjects were not present at either of the two testing sessions held in their schools. The addresses of these subjects were obtained and they were mailed a questionnaire with the same covering letter as the subjects in the public system. Twenty-one of these questionnaires were returned by mail.

Several of the Grade 6 subjects had transferred to schools not tested in year 1 of the study. If two or more girls had transferred to the same school, the author contacted the principals of those schools and requested to retest the girls in person. However, four girls from the study were the only subjects enrolled in their particular schools. Because of time constraints, the addresses of these girls were obtained and the questionnaire was mailed to them. All but one returned it.

In total, 42 questionnaires were mailed out to subjects in the study. Thirty questionnaires or 71.4 percent were returned in time to be included in the analysis.[9] Thus, the author was present for the completion of 545 questionnaires or 94.8 percent of the data in year 2 of the study.

Arrangements had been made with the various principals to survey the 545 subjects in their schools. Exactly the same testing procedures were followed as in year 1 of the study. The directions for each instrument and the explanations given for often-queried items had been recorded during the year 1 testing and these were repeated in year 2. An assistant from the University of Alberta was present for nine of the largest testing sessions. She recorded the subjects' case numbers and assisted with the weighing and measuring. To ensure accurate and consistent measurements of body composition, either the author or the assistant measured the girls' heights with a ruler taped to the wall. The girls weighed themselves on a set of bathroom scales.

The subjects completed the questionnaire in slightly less time than the year before. The Grade 7 to 9 subjects took from 40 to 45 minutes to complete each session, and the Grades 10 and 11 subjects took from 30 to 40 minutes. The same case numbers used in year 1 were placed on both sessions of the year 2 questionnaire.

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[9] After the analysis was completed, five more questionnaires were returned by mail.

Some of the subjects were absent from school on one of the testing days and consequently missed either the first or the second testing sessions. If they missed the first testing session but attended the second, they were given the first session of the questionnaire and asked to complete it on their own time. They returned it to the school secretary who mailed it to the school board office via the internal mailing system. If any girl missed the second session, the questionnaire was given to the principal to pass on to her. She was to complete it and return it via the school mailing system. Thirty-four of the first session and 33 of the second session of the questionnaire were returned in this manner.

DATA PREPARATION

The majority of the data collected in the study was keypunched directly from the questionnaire. Data card column numbers had been attached to all items from Parts I to VI before the questionnaire had been printed. Thus, the values could be keypunched directly from the questionnaire. Parts VII and VIII of the questionnaire were manually coded by the author and an assistant onto data sheets, and then keypunched. The value codes for the open-ended questions are outlined in Appendix G (p.251). All keypunching was done by Data Entry Services at the University of Alberta.

Six Michigan Terminal System (MTS) files were created to store the raw data from the two years of the study. The MTS program *SORT was used to sort the data according to case numbers and card numbers in each file. The sorted data was then transferred to Statistical Package for the Social Sciences (SPSS) files for analysis. A subfile structure by grade was developed using the SPSS programs SORT CASES and SUBFILE LIST. To ensure that the subjects in each subfile (grade) were in the same order in each of the six files, the SPSS program LIST CASES was used.

Variable Transformations

Many of the original 478 items included in the study had to be combined into total instrument scores. The original items were transformed into 45 variables for inclusion in the analysis. Of the six participation variables, two variables had to be derived from combinations of other variables. For the total number of activities variable, the number of activities listed for three seasons (spring/fall, summer, and winter) were combined. For the frequency of favourite activities variable, the frequency of participation in the four most favourite activities was averaged. Details of these variable transformations, and the value codes for all of the variables included in the study are included in Appendix H (p.256).

Scores were obtained for 37 related variables to be used in further analyses. For some of these inventories, subjects failed to respond to all of the items. Sometimes they also mistakenly circled two numbers on one line and none on the following line, causing two missing values to be recorded. These missing values caused a problem when computing the total instrument scores. A decision had to be made about the percentage of missing values that would be allowed before the instrument score would be considered invalid. It was arbitrarily decided that 20 percent missing values would be allowed, that is, a subject had to respond to at least 80 percent of the items in an instrument to receive a score on that instrument. For example, for the six activity dimensions of Holland's Self Directed Search, if fewer than nine items (80 percent of 11) were answered by a subject, she received a missing value for that dimension. The number of missing items for each of the related variables are outlined in Appendix J (p.268).

It was also decided to average the instrument scores by the number of items answered, rather than by the total number of items in the inventories, to standardize the scores for all subjects. It was felt that dividing the score by the total number of items for all subjects would unfairly lower the scores of subjects who mistakenly missed out an item or circled two items on one line. This procedure of dividing by the number of items answered, rather than by the total number of items, was applied to all instruments where average scores were needed.

Table 10 outlines the instruments that required the averaging of scores. It also outlines the number of items in each instrument and the number of items (80 percent of total items) that had to be answered in order for a subject to receive a score on that inventory.

Table 10

Instruments Requiring Averaged Scores

Instrument	Total Items in Instrument	80% of Total Items
Interest Dimensions	11	9
Sex Role Inventory	20 masculine	16
	20 feminine	16
Movement Satisfaction	50	40
Body Cathexis	43	35
Satisfaction with Physical Education	19	15
Attitude to Subdomains of Physical Activity	8	6
Image of Female Athlete	8	6

Details of the instrument items that were combined to produce the 37 related variables are outlined in Appendix H, (p.256), along with their value codes. Some additional comments should be made about a few of the instruments. On the sex role inventory, if either the masculine or feminine scores were missing, the sex role score was not calculated for that subject. For the eight semantic differential scales, four of the items in each subdomain were inverted (1, 5, 6, 8) to have the positive adjectives with the highest scores. No missing values were allowed in the calculation of the self esteem scores as this would alter the Guttman scaling technique. The self esteem score was calculated as outlined by Rosenberg (1965).

Two of the socialization variables, significant others' participation and significant others' encouragement for physical activity, included nine significant others, but many of the subjects had one or more of these people missing (number of missing significant others included in Appendix J, p.268). Because of the widely varied number of significant others available to each subject, it was decided to average the responses by the number of significant others each subject had. Thus, the nine significant others' participation variables and the nine encouragement variables were added together and then divided by the number of significant others applicable for each subject, to arrive at the significant others' participation and encouragement scores. For example, if a subject responded to only two items (eg. father and mother), her sum would be divided by 2, whereas if a subject responded to all nine items, her sum would be divided by 9. This standardized the socialization variables by accounting for the number of significant others available to each subject.

The subject had to respond to at least two items from these questions to receive scores on the variables. This ensured that the subject had seriously attempted the questions. If less than two items were answered, the subject received a missing value on the variable. All "not applicable" responses were recoded as missing (0) before calculating the average scores.

Five variables were added to obtain the father's and mother's socialization influence variables:

1. Frequency of participation in activity
2. Frequency of participation with subject
3. Frequency of watching subject participate
4. Degree of encouragement for activity
5. Degree of aspirations for subject to be good.

To calculate the socio-economic status scores, each subject's father's and mother's occupations were ranked from 1 to 496 according to Blishen and McRoberts (1976). Using their six classes of socio-economic status for occupations, the rankings were recoded into one of the six classes or categories. If the father's occupation was available, it was used as the measure of socio-economic status. If the father's occupation was not available but the mother's was, then the mother's occupation was used as the measure of socio-economic status. If neither were available, the subject was given a missing value for this variable. Many of the mothers' occupations were given as housewife (working at home). If it was necessary to use the mother's occupation for socio-economic status (father's occupation missing) and the occupation was given as housewife, then it was put into the lowest category (1).

The number of younger brothers variable was calculated by subtracting the number of older brothers from the total number of brothers response. Ordinal position was calculated by adding the number of older brothers and the number of older sisters. The height and weight responses were placed into five categories based on their percentile rankings according to Ross Laboratories (1976).

STATISTICAL ANALYSIS

Descriptive Statistics

Descriptive data (frequency counts, percentages, means, and standard deviations) were obtained for the demographic variables, the open-ended questions, and the related variables using SPSS programs CROSSTABS and XCROSSTABS. The grade means for the related variables were compared using SPSS program ONEWAY.

Analytical Statistics

Two major questions were addressed by the study:

1. Did differences occur in adolescent girls' participation in physical activity as they got older, and if so, at what ages did those differences occur?

2. What variables were related to participation in physical activity?

The analytical statistics attempted to provide answers to those questions.

Analysis of Participation

Participation was analyzed by comparing the six participation variables (interschool teams, intramural activities, community organized activities, average hours per day, total activities, and frequency of favourite activities) in combination and individually. The data from year 1 and year 2 were also compared.

For both year 1 and year 2 of the study, the six primary participation variables were compared across the five grade levels with a multivariate analysis of variance using MIDAS program MANOVA. Listwise deletion[10] of missing data was used in the analysis. The multivariate analysis of variance determined if there was an overall difference in the six participation variables taken in combination. It considered the correlations between the six variables instead of taking each variable separately, and determined if there was a difference between groups (grades) in the six variables considered at once. Post hoc tests were performed to determine whether differences occurred between each pair of grades.

A one-way analysis of variance was performed for each of the six participation variables separately to determine if there were differences among the grades for each of the participation variables taken individually. SPSS program ONEWAY was used with SCHEFFE contrasts to compare all possible pairs of group means. SCHEFFE is exact for unequal group sizes (Nie et al, 1975). Pairwise deletion[11] of missing data was used. The number of cases for each group, means, standard deviations, standard errors, minimum, maximum, and 95 percent confidence intervals for the mean were also calculated.

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[10] In listwise deletion, a case is omitted from the calculations if it contains a missing value for any variable included in the analysis.

To compare the data from year 1 and year 2, a one-way analysis of variance with repeated measures was calculated for each participation variable. SPSS program ANOVAR compared the group main effect (years 1 and 2 combined), the year main effect (five grades combined), and the interaction effect (year with grade). Listwise deletion of missing data was used. Difference scores were also calculated for each participation variable by subtracting the year 1 value from the year 2 value. A positive difference score indicated a gain in participation (year 2 higher), and a negative difference score indicated a loss in participation (year 1 higher).

Relationship between Participation and Related Variables

The relationships between the participation variables and the related variables were examined in three different ways. Firstly, each of the 37 related variables were correlated with each of the six participation variables to examine which individual variables were related to participation. SPSS program

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[11] In pairwise deletion, a case is omitted from the calculations if the value for one of the pair of variables being analyzed is missing.

PEARSON CORR was used to calculate correlations for each grade level separately and for the total sample combined.

Next a canonical correlation was performed to determine if the set of participation variables were related to the set of related variables as a whole. Canonical correlation combines two sets of variables in such a way that the correlations between the two sets are maximized. Only the 26 related variables with at least six significant correlations ($p < .05$) from the individual correlations were included in the analysis.[12] The 26 variables included are outlined in Appendix I (p.265). SPSS program CANCORR was used for the total sample combined and for each of the five grades separately. Listwise deletion of missing data was used in the analysis.

The canonical correlation had first been tried with pairwise deletion of missing data. However, with pairwise deletion, the correlation coefficients between all the pairs of variables were calculated for very different sample sizes. This caused the correlation matrix to be singular. It could not be inverted and the canonical correlation procedure could not be carried out. In order to use the procedure, listwise deletion had to be used. This drastically reduced the number of cases in the sample (only 333 subjects had values for all the variables to be included in the canonical correlation) but it was felt that the variables had been missed at random and that the 333 subjects were still a representative sample.

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[12] There was a possibility of 36 significant correlations--6 participation variables x 5 grades + total.

The final procedure used was a factor analysis to determine which of the participation variables and which of the related variables would load together on the same factors. The participation variables and the related variables were included in a principal components factor analysis without iteration and with pairwise deletion of missing data.

A principal components factor analysis without iteration had to be used because with pairwise deletion of missing data the correlation matrix was singular and could not be inverted. Therefore, squared multiple correlations could not be calculated and inserted into the diagonal of the matrix as estimates of the communalities. With the principal components factor analysis, 1.0 was placed in the diagonal as estimates of the communalities, and therefore, the correlation matrix did not need to be inverted. It was decided to use pairwise deletion, and hence the principal components factor analysis without iteration, in order to make use of as much of the available data as possible.

SPSS program FACTOR, TYPE=PA1, was used. Again, the 11 variables with fewer than six significant correlations ($p < .05$) with the six participation variables were not included in the factor analysis. The 26 variables included are outlined in Appendix I (p. 265). The analysis was done for the total sample combined and for each of the five grades separately. Factor scores from the total sample analysis were calculated for each subject and were compared across the five grade levels using

SPSS program ONEWAY.

Comparison of Year 1 and Year 2 Values

To compare the variables from year 1 to year 2, a one-way analysis of variance with repeated measures was calculated for each variable. SPSS program ANOVAR compared the grade main effect (year 1 and 2 combined), the year main effect (five grades combined), and the interaction effect (year with grade). Listwise deletion of missing data was used.

Difference scores were calculated for each related variable in the study by subtracting the year 1 value from the year 2 value. A positive difference score indicated a gain on the variable (year 2 higher), and a negative difference score indicated a loss on the variable (year 1 higher). The mean of each variable's difference score was calculated for each grade and the total sample (SPSS program ONEWAY). Also each of the related variables' difference scores was correlated with each of the participation variables' difference scores to examine relationships (SPSS program PEARSON CORR).

Chapter 5

DESCRIPTIVE RESULTS

DEMOGRAPHIC INFORMATION

The sample for the study included adolescent girls from Grades 6 to 10 in the Edmonton Catholic School District. The questionnaire was completed by 661 girls in year 1 of the study (1978) and by 575 girls in year 2 of the study (1979). Table 11 outlines the number of girls and percentage of the sample in each of the five grades for both years. The percentage in each grade for both years was consistent.

Table 11

The Sample by Grade

Year 1 of Study Grade	 Number	 Percent of Sample	Year 2 of Study Grade	 Number	 Percent of Sample
6	207	31.3	7	181	31.4
7	128	19.4	8	115	20.0
8	102	15.4	9	90	15.7
9	104	15.7	10	82	14.3
10	120	18.2	11	107	18.6
Total	661	100.0	Total	575	100.0

Considerable demographic information was obtained on the subjects of the study and will be presented here. Most of the information was gathered during year 1 of the study with a possible total of 661. Any exceptions will be noted.

The distribution of ages by grade are presented in Table 12 along with the average age for each grade. The ages were mainly distributed between 11 and 16 years of age.[13]

Table 12

Ages of Sample

Age	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
11 or Younger	115 56.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	115 17.5%
12	84 41.2%	69 53.9%	0 0.0%	0 0.0%	0 0.0%	153 23.3%
13	5 2.5%	51 39.8%	62 60.8%	0 0.0%	0 0.0%	118 17.9%
14	0 0.0%	6 4.7%	35 34.3%	65 62.5%	0 0.0%	106 16.1%
15	0 0.0%	2 1.6%	5 4.9%	34 32.7%	72 60.0%	113 17.2%
16	0 0.0%	0 0.0%	0 0.0%	4 3.8%	46 38.3%	50 7.6%
17	0 0.0%	0 0.0%	0 0.0%	1 1.0%	1 0.8%	2 0.3%
18	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.8%	1 0.2%
Average Age	11.46	12.54	13.44	14.43	15.43	13.17
Standard deviation	.55	.66	.59	.62	.56	1.59
Total N	204	128	102	104	120	658

An indication of the level of maturity of the subjects is given in Table 13, as the age of menarche (age at which a girl begins menstruating). Thirty-four percent of the sample had not begun menstruating. The average age of menarche for the total sample was 12.06 years. It increased consistently in age from Grade 6 to 10.[14]

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[13] Three of the 661 subjects failed to answer this item. The percentages were calculated from the subjects responding to the item (658) and not from the total in the sample (661). This practice was followed for the remainder of the descriptive and analytical results.

Table 13

Age of Menarche

Age of Menarche	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Have not begun yet	142 75.5%	51 44.3%	14 14.6%	5 5.0%	1 0.8%	213 34.4%
10 or under	6 3.2%	6 5.2%	5 5.2%	5 5.0%	6 5.0%	28 4.5%
11 years	24 12.8%	17 14.8%	11 11.5%	19 19.0%	18 15.0%	89 14.4%
12 years	15 8.0%	34 29.6%	42 43.8%	36 36.0%	37 30.8%	164 26.5%
13 years	1 0.5%	6 5.2%	21 21.9%	27 27.0%	36 30.0%	91 14.7%
14 years	0 0.0%	0 0.0%	3 3.1%	6 6.0%	17 14.2%	26 4.2%
15 years	0 0.0%	1 0.9%	0 0.0%	1 1.0%	5 4.2%	7 1.1%
16 or over	0 0.0%	0 0.0%	0 0.0%	1 1.0%	0 0.0%	1 0.2%
Average age of Menarche	11.24 yr.	11.69 yr.	12.07 yr.	12.18 yr.	12.46 yr.	12.06 yr.
Standard deviation	.71	.89	.89	1.09	1.18	1.08
Total N	188	115	96	100	120	619

Several variables related to the subjects' family backgrounds were measured. Socio-economic status is presented in Table 14 as derived from Blishen and McRoberts' (1976) scale.

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[14] All subjects who had not reached menarche were not included in the calculation of the average age of menarche. Hence, the average ages in the lower grades were lower because only the earlier maturing girls were included in the calculation of the means. The average ages of the Grade 9 and 10 samples are probably more accurate estimates of the true age of menarche as they include both early and late maturing girls.

The scale measures the social status of Canadian occupations and is divided into six classes ranging from very low to very high status. The average of this study was between the second and third classes (low to lower middle class), and the majority of the sample (59.0 percent) were in the two lower classes. Thus, the socio-economic status of the sample was relatively low. The Grade 10 sample had a significantly higher socio-economic status than the other grades (F-ratio = 5.44, $p < .001$). Perhaps children of low socio-economic background are not encouraged or are not able to undertake high school education.

Table 14

Socio-Economic Status

SES Category		Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Very Low	(1)	78 40.0%	41 33.1%	32 31.7%	38 37.3%	23 19.7%	212 33.2%
Low	(2)	61 31.3%	31 25.0%	23 22.8%	18 17.6%	32 27.4%	165 25.8%
Lower Middle	(3)	25 12.8%	13 10.5%	21 20.8%	21 20.6%	22 18.8%	102 16.0%
Upper Middle	(4)	14 7.2%	15 12.1%	10 9.9%	10 9.8%	13 11.1%	62 9.7%
High	(5)	11 5.6%	15 12.1%	8 7.9%	9 8.8%	22 18.8%	65 10.2%
Very High	(6)	6 3.1%	9 7.3%	7 6.9%	6 5.9%	5 4.3%	33 5.2%
Average SES Category		2.16	2.67	2.60	2.53	2.95	2.53
Standard deviation		1.34	1.66	1.55	1.57	1.52	1.53
Total N		195	124	101	102	117	639

Table 15 presents a related variable to socio-economic status, level of parents' education. Both parents had average education levels between "some high school" (category 3) and "high school graduate" (category 4). Only 23 percent of the fathers and 18.7 percent of the mothers had university or vocational training (categories 5 to 8). About 25 percent of the sample did not know their parents' level of education.

Table 15

Parents' Education

Education	Grade 6		Grade 7		Grade 8		Grade 9		Grade 10		Total	
	Fat.	Mot.	Fat.	Mot.	Fat.	Mot.	Fat.	Mot.	Fat.	Mot.	Fat.	Mot.
(1) Less than 7 years	20	20	19	14	13	13	17	20	13	9	82 14.1%	76 12.5%
(2) Junior high	14	11	11	15	15	17	15	20	19	12	74 12.7%	75 12.5%
(3) Some high school	13	22	6	13	12	13	9	12	13	28	53 9.1%	88 14.6%
(4) High school graduate	20	24	24	28	12	13	9	15	20	28	85 14.6%	108 17.9%
(5) Some university	6	3	2	7	3	5	7	5	6	4	24 4.1%	24 4.0%
(6) University degree	5	8	7	9	8	7	7	5	5	10	32 5.5%	39 6.5%
(7) Vocational training	8	7	6	2	4	2	4	4	16	6	38 6.5%	21 3.5%
(8) Graduate work	8	5	10	4	7	7	8	5	7	7	40 6.9%	28 4.7%
Don't know	72	72	35	33	19	16	18	12	11	10	155 26.5%	143 23.8%
Average education	3.7	3.6	3.9	3.6	3.7	3.6	3.7	3.2	4.0	3.9	3.8	3.6

The subjects' ethnic origin was surveyed in year 2 of the study (possible total of 575) to determine what proportion of the sample was born in Canada and what proportion spoke a language other than English in their home. Thirteen percent of the total sample were born in a country other than Canada. The percentage was highest in Grade 8 (18.4 percent) and lowest in Grade 11 (7.5 percent).[15] The other countries in which the subjects were born were numerous and varied. The most frequent countries were Portugal (17 subjects), Italy (9 subjects), and the Phillipines (5 subjects). One or two subjects were each born in a total of 22 other countries, most of which are indicated by the languages listed in the next table.

Sixty-two percent of the total sample spoke a language other than English in their home, indicating a strong influence from their ethnic culture. The percentage was much higher in Grade 7 (70.6 percent) than in Grade 11 (52.3 percent).[16] The same trend seems to apply for ethnic background as for socio-economic status--a gradual change from lower to higher grades. Table 16 outlines the languages spoken by the sample. French was the most popular (35.8 percent) with Italian (22.0 percent) and Ukranian (12.7 percent) also having large percentages.

The subjects were asked to state their religious preference. Ninety-six percent of the sample were of the Catholic religion. This was not surprising as the students were enrolled in a Catholic school system.

Table 17 summarizes the sibling sex status of the subjects including total size of family and ordinal position.[17]

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[15] For Grade 7, 13.3 percent were born in a country other than Canada; Grade 9, 13.6 percent; and Grade 10, 11.1 percent.

[16] For Grade 8, 59.3 percent spoke another language; Grade 9, 59.5 percent; Grade 10, 63.0 percent.

[17] The size of family means were calculated by adding the number of brothers and sisters. The subject herself was not included in these statistics. Therefore, the average total family size was actually 3.95 or almost four children per family.

Table 16

Language Spoken Other Than English

Language	No. of Subjects	% of Languages	Language	No. of Subjects	% of Languages
French	124	35.8	Dutch	4	1.2
Italian	76	22.0	Spanish	4	1.2
Ukranian	44	12.7	Chinese	2	.6
Portuguese	24	6.9	Lebanese	1	.3
Polish	19	5.5	Czechoslovakian	1	.3
German	17	4.9	Irish-Gaelic	1	.3
Yugoslavian	9	2.6	Swahili	1	.3
Cree	7	2.0	Austrian	1	.3
Hungarian	7	2.0			
Phillipino	4	1.2	Total	346	100%

Table 17

Sibling Sex Status

Variable	Grade 6 Mean N = 205	Grade 7 Mean N = 128	Grade 8 Mean N = 102	Grade 9 Mean N = 102	Grade 10 Mean N = 120	Total Mean N = 657
Size of Family	2.74	2.93	3.35	2.98	2.95	2.95
Ordinal Position	1.62	1.78	2.36	1.89	1.82	1.84
No. of Brothers	1.32	1.59	1.76	1.59	1.48	1.51
No. of Older Brothers	.76	.99	1.21	1.03	.95	.95
No. of Younger Brothers	.56	.60	.55	.56	.53	.56
No. of Sisters	1.42	1.32	1.58	1.39	1.47	1.43
No. of Older Sisters	.85	.78	1.15	.86	.86	.89
No. of Younger Sisters	.57	.54	.43	.53	.61	.54

Some additional statistics were calculated that are not presented in this table. Only 3.0 percent of the total sample were single children with no brothers or sisters, while 28.3

percent were first-born children. Twenty percent had no brothers and 25.3 percent had no sisters. Eight girls had ten or more brothers and sisters.

The heights and weights of the subjects were measured and the results are presented in Tables 18 and 19 respectively. The raw measurements were recoded into norm percentile groups to determine what percentage of the sample were underweight or overweight, short or tall.

Table 18

Height of Sample

Height Percentile	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Below 10th Percentile	6 3.0%	6 5.0%	2 2.0%	3 3.1%	7 6.0%	24 3.8%
10 - 24.9th Percentile	18 9.1%	16 13.2%	11 11.2%	8 8.2%	11 9.4%	64 10.1%
25 - 75th Percentile	125 63.5%	77 63.6%	73 74.5%	70 71.4%	81 69.2%	426 67.5%
75.1 - 90th Percentile	23 11.7%	12 9.9%	5 5.1%	9 9.2%	12 10.3%	61 9.7%
Above 90th Percentile	25 12.7%	10 8.3%	7 7.1%	8 8.2%	6 5.1%	56 8.9%
Average Height	59.04 in.	61.23 in.	62.47 in.	63.44 in.	63.52 in.	61.51 in.
Standard deviation	2.99	2.68	2.03	2.47	2.77	3.25
Total N	197	121	98	98	117	631

Average heights and weights were considered to fall between the 25th and 75th percentiles for each grade level. From the 10th to the 25th percentiles was considered below average, while below the tenth percentile was well below the average (very short or very underweight). Subjects between the 75th and the 90th percentiles were above average, and subjects above the 90th percentile were well above the average (very tall or very overweight). Over 62 percent of the total sample were of average heights and weights (between 25th and 75th percentiles). The remainder of the sample was fairly equally divided between being above average and being below average. Thus, the sample appears to have their heights and weights normally distributed.

Table 19

Weight of Sample

Weight Percentile	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Below 10th Percentile	7 3.7%	5 4.2%	1 1.1%	2 2.0%	6 5.2%	21 3.4%
10 - 24.9th Percentile	32 17.0%	12 10.0%	14 14.7%	8 8.1%	23 20.0%	89 14.4%
25 - 75th Percentile	118 62.8%	70 58.3%	55 57.9%	66 66.7%	76 66.1%	385 62.4%
75.1 - 90th Percentile	25 13.3%	22 18.3%	20 21.1%	20 20.2%	9 7.8%	96 15.6%
Above 90th Percentile	6 3.2%	11 9.2%	5 5.3%	3 3.0%	1 0.9%	26 4.2%
Average weight	87.12 lb.	103.56 lb.	109.15 lb.	117.82 lb.	116.16 lb.	104.08 lb.
Standard deviation	14.13	19.13	16.74	17.36	14.25	20.22
Total N	188	120	95	99	115	617

OPEN-ENDED QUESTIONS

Several open-ended questions were included in the questionnaire to obtain some additional descriptive information. They were basically of four types:

1. Questions about the physical education program
2. Questions about participation in physical activity generally

3. Types of activities participated in and favourite activities

4. Role models.

Physical Education Program

Three open-ended questions were asked regarding the physical education program in which the subjects were enrolled:

1. What do you think is the most important reason for having physical education?

2. What do you like most about physical education?

3. What do you like least about physical education?

The complete responses to these questions are presented in Appendix K (p.274) for each grade separately and for the total sample.

The question regarding the most important reason for having physical education was included to obtain the subjects' perceptions of the school's objectives for physical education. Sixty-six percent of the total sample gave fitness and health-related reasons including "to be fit, to get in good shape, to be healthy, to get exercise, to make me feel better".[18] The second most popular reason (15.3 percent) for physical education was its educational value--"learning about sports, developing skill". Enjoyment was the third reason given (10.6 percent) and was more popular among the lower grades. The socialization value including "learning sportsmanship, teamwork, to compete", competition and challenge, and social reasons including "playing with friends, meeting new friends", were other reasons listed by a small percentage of the sample.

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[18] The actual responses placed in each category of reasons are included in Appendix G (p.251).

The factors liked most about physical education were quite different than the perceived objectives for physical education. Sixty-six percent of the total sample gave factors related to enjoyment. Seventeen percent actually listed enjoyment and fun while 49.6 percent gave related factors, like enjoyment of a specific sport, actually playing the games, and the variety of activities. Only 9.7 percent gave health and fitness-related reasons. Health and fitness were the prime reasons perceived for having physical education but they were certainly not the factors liked most. Educational value, social reasons, specific aspects of the physical education program, and competition were the factors given by the remaining subjects.

The factors liked least about physical education were quite varied. Disliking a specific sport and being forced to do an activity they did not like were the reasons given by 26.8 percent of the total sample. Fitness-related exercises, warmups, and running comprised the second largest group of reasons (16.2 percent). This substantial percentage disliked the major perceived reason for physical education. Many of the other factors disliked about physical education were related to specific aspects of the program such as the teacher, teaching and grading method; changing, uniform required; inactivity, lecture; written exams; too many students; co-ed classes; and facilities, equipment. Other factors included feeling inferior or self-conscious; negative players, poor sports; the exertion required, sweating; practicing and learning the sport; and competition. Twelve percent of the sample had no negative feelings toward physical education as indicated by the responses "nothing" and "not enough time".

Participation in Physical Activity

Several open-ended questions were asked about participation in physical activity generally:

1. What do you like most about physical activity?
2. What do you like least about physical activity?
3. Why is ____ your favourite physical activity?
4. Do you wish you participated in more physical activity?
5. If so, why do you not participate more?
6. Do you participate in as much physical activity as you did last year?
7. If not, why do you not participate as much?

The complete responses to these questions are detailed for each grade and the total sample in Appendix L (p.278).

The two main factors liked most about general physical activity were fun and enjoyment (31.3 percent) and health and fitness (28.1 percent). These were also the two main factors liked about physical education but in much different proportions. For the physical education question, enjoyment of specific sports and variety of activities were combined with the enjoyment factor to total 66.1 percent of the responses. Combining those same responses for the physical activity question gave a total enjoyment percentage of 38.2 percent. The health and fitness percentage was 9.7 percent and 28.1 percent for the physical education and the physical activity questions respectively.

Why the difference between physical education and general physical activity? Why did the subjects favour enjoyment so much more for physical education than for physical activity? Perhaps it is because physical education is compulsory while physical activity is voluntary. If they had to take physical education, they wanted to enjoy it, while with physical activity they might have realized the accompanying health and fitness benefits and been willing to participate voluntarily. On the other hand, perhaps it is due to the difference in activities. Activities in physical education may be more competitive, intensive, and fitness-oriented, and hence not as enjoyable for some people as recreational activities.

The other factors liked about physical activity were similar to the factors liked about physical education--to be active, challenge and competition, social reasons, feelings of speed, excitement, and coolness, something to do, and to develop skill.

The factors liked least about physical activity give some indication of negative aspects of physical activity participation. The most frequent responses were the exertion required, sweating, and getting tired (24.5 percent). Obviously, some of the girls felt that physical activity took a great deal of effort. Perhaps for some it was not worth the effort. The next most frequent response was the dislike of a specific sport or a boring activity (10.5 percent). Other factors listed were running, exercises, and warmups; getting hurt; negative players or poor sports; feeling inferior or not knowing how; no programs, facilities, or expensive equipment; competition; being forced to participate; practising; hating losing; no one to do it with; and medical problem. Twenty-one percent of the total sample had no negative feelings toward physical activity as indicated by their responses of "nothing" or "not enough time".

The subjects had been asked to list their favourite activity and then to give the reason why that was their favourite activity. Thirty-seven percent responded fun and enjoyment. The second most frequent response was fitness-related (8.7 percent). The subsequent reasons give some insight into why the subjects enjoyed their favourite activity. These responses are more informative than a straight enjoyment response, and offer some valuable insight into the prime motivating factors among adolescent girls. They included being good at it; social reasons; speed, excitement; loving horses/water; being active, outside; challenge, competition; doing it a long time; novelty; feelings of coolness and freedom; having the equipment or facilities; and something to do.

Two questions were asked to determine whether the subjects participated in as much physical activity as last year and whether they wished to participate more than they did. To the first question, 75.3 percent of the total sample answered affirmatively, indicating that they did not perceive any change in their participation from the previous year. However, the Grade 10 sample was considerably lower (57.5 percent) in their "yes" response.[19]

The second question asked "Do you wish you participated in more physical activity?" Again the response was 75.3 percent "yes" with a larger percentage of the Grade 10 sample answering affirmatively (81.5 percent).[20] Most of the sample did want to participate more. The reasons why the subjects did not participate more and why they did not participate as much as last year were quite similar. Not enough time was the big reason in both cases (46.7 percent in the first case and 21.6 percent in the second). Other reasons for not participating as much as last year included not wanting to (10.5 percent); homework; involved in other activities; working at home, job, babysitting; no facilities, program; not good at it, shy, self-conscious; being lazier; no one to do it with;

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[19] For Grade 6, 79.0 percent answered "yes"; Grade 7, 78.4 percent; Grade 8, 77.0 percent; Grade 9, 83.7 percent.

[20] For Grade 6, 76.9 percent answered "yes"; Grade 7, 73.4 percent; Grade 8, 71.3 percent; Grade 9, 71.2 percent.

medical problem; and competition. There were substantial differences among the five grade levels. In particular, the Grade 10 girls did not participate as much largely because of other commitments--homework and jobs (30.4 percent).

In response to the second question, the other main reasons why 75 percent of the sample did not participate in more physical activity were no facilities, programs, or expensive equipment; not good at it, shy, self-conscious; involved in other activities; homework; working at home, job, babysitting; the effort required; no one to do it with; not wanting to; parents; medical problem; boring activity; getting hurt; and competition.

Types of Activities

The questionnaire items surveying physical activity participation yielded some descriptive information regarding the types of activities in which the subjects participated. The interschool sports in which the girls competed, the community organized activities, the activities participated in recreationally by season, and the four favourite activities are listed in Appendix M (p.284) for each grade separately and for the total sample.

The most frequently occurring interschool teams were track and field, volleyball, and basketball, in that order, for the total sample and the junior high grades. For Grade 6 (elementary school), volleyball was most popular and track and field was second. There were no basketball interschool programs in Grade 6. For Grade 10 (senior high school), basketball was most frequent, then volleyball and track and field.

Softball and swimming were the two most popular community organized activities, each representing 22.5 percent of the total responses. Swimming was by far the most popular organized activity with the Grade 6 sample (33.5 percent), but the percentages across the five grades were quite similar for most of the other activities. Dance, soccer, figure skating, and gymnastics were also quite popular community organized activities.

The subjects had been asked to list all the activities in which they participated recreationally for three seasons of the year--summer, spring/fall, and winter. The most popular summer activities were swimming, cycling, softball, and tennis. The percentages were quite similar across the five grade levels. The spring/fall activities were very similar to the summer activities with the most popular being cycling, softball, swimming, and soccer. Again the percentages for most of the activities were fairly similar for the five grades with the exception of murderball, skipping, races-tag, and dodgeball. These were most popular in Grade 6, a little popular in Grade 7, and virtually non-existent in Grades 8 to 10. It appears that some of the Grade 6 girls were still playing children's games, but by the time they reached Grade 8 they were involved in more "adult" activities.

The most popular winter activity for all the grades was skating. The second most popular activity for Grades 6 and 7 was tobogganning, while for Grades 8 to 10 it was skiing. Other grade differences could be seen with snowball fights, building snowmen, and playing in the snow, which were quite popular in Grades 6 and 7, but not so in the higher grades. As with the spring/fall activities, the "play" element is still very evident in the younger girls' winter activities.

Finally, the subjects had been asked to list their four favourite physical activities, including competitive, organized and recreational activities. The most favourite activities were swimming, cycling, softball, and tennis. Some grade differences could be seen with softball decreasing in popularity with grade, and downhill skiing, tennis, and badminton increasing with age.

Role Models

A few questions were asked to investigate the girls' sport role models. Firstly, the subjects were asked if they had a sports hero. Forty-two percent of the total sample did have a sports hero. The Grade 6 sample had the highest proportion (47.3 percent).[21] Of those subjects who did have a sports hero, only 29.4 percent had a female hero. The Grade 6 sample had a higher percentage (34.8 percent) of female heroes as compared to the Grade 10 sample (24.0 percent).[22]

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[21] 36.8 percent of Grade 7 had a sports hero, 39.6 percent of Grade 8, 42.2 percent of Grade 9, and 42.9 percent of Grade 10.

[22] For Grade 7, 28.9 percent had a female hero; Grade 8, 26.3 percent; Grade 9, 27.9 percent.

The subjects were then asked if they had a favourite female sports participant. Forty-five percent of the total sample did.[23] However, only 211 subjects or 31.9 percent of the sample named their favourite female sports participant. Those named are presented in Appendix N (p.291). For year 1 of the study (May 1978), Nadia Comaneci was the most popular athlete (31.9 percent of responses). Chris Evert, Karen Magnussen, Billy Jean King, Dorothy Hamel, and Beckie Smith were also quite popular with 10 or more responses each. Interestingly, when the same question was asked in year 2 of the study (May 1979), Diane Jones-Konihowski was the most popular athlete with 43.2 percent of the responses. This suggests the impact of major sporting events like the Olympics and the Commonwealth Games on the formation of role models.

OTHER ACTIVITIES AND INTERESTS

In order to have a complete picture of adolescent girls participation in physical activity, it would be helpful to know what other interests these girls had, and where sports and physical activity fit among these other activities. A ranking question of 11 activities had been included in the questionnaire and the girls were required to rank the activities from 1 to 11 in order of their preference. Table 20 presents the average ranking of each activity for each grade in year 2 of the study (Grade 7 to 11). For all grades,

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[23] Grade 6, 41.0 percent; Grade 7, 43.2 percent; Grade 8, 47.5 percent; Grade 9, 51.0 percent; Grade 10, 44.5 percent.

Table 20

Preference of Activities

Grade 7		Grade 8		Grade 9		Grade 10		Grade 11	
Going out	4.40[a]	Going out	3.57	Going out	3.44	Going out	2.47	Going out	2.43
Dancing	4.52	Visiting friends	4.63	Visiting friends	4.42	Visiting friends	3.10	Visiting friends	3.34
Sports	4.59	Dating boys	4.86	Dating boys	4.78	Dating boys	4.19	Dating boys	4.30
Visiting friends	4.80	Dancing	4.97	Sports	4.96	Listening to music	4.51	Listening to music	5.03
Listening to music	4.83	Listening to music	5.25	Listening to music	5.01	Sports	5.35	Sports	5.24
Dating boys	6.33	Sports	5.48	Dancing	5.42	Dancing	5.72	Dancing	6.00
Television	6.59	Television	6.51	Television	6.92	Television	7.31	Reading	7.39
Arts, crafts	7.81	Reading	7.41	Reading	8.05	Reading	7.94	Television	7.98
Reading	7.92	Arts, crafts	8.46	Club	8.18	Club	8.89	Club	8.32
Club	8.45	Club	8.74	Arts, crafts	8.76	Musical instrument	8.92	Arts, crafts	8.84
Musical instrument	8.53	Musical instrument	9.07	Musical instrument	9.14	Arts, crafts	9.60	Musical instrument	9.45

[a] The value represents the average ranking between 1 and 11 for that activity. A lower value represents a higher ranking.

"going out"[24] was the favourite activity. Visiting friends and dating boys were the next favourite activities for all grades except Grade 7. Dancing and sports ranked above these two for the youngest grade in the sample. Except for these differences, most of the other rankings of activities were fairly consistent across the five grade levels. It appears that social activities, including dating boys, were most preferred by adolescent girls. However, sports were preferred over other activities like television, reading, arts and crafts, belonging to a club, and playing a musical instrument. For the Grade 7 sample, sports were even preferred over visiting their friends and dating boys.

Two other ranking questions were included to determine where sports ranked among aspirations at school and among factors that made the girls popular. Table 21 outlines the percentage of the subjects that ranked each of making good grades, being good at sports, and being popular as what they would most like to do at school. For all grades, making good grades was by far the most important with nearly 75 percent of the sample ranking it first. Being popular was the second most important factor in all grades except Grade 10 where it was almost equal with being good at sports. The last choice was being good at sports except in Grade 10.

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[24] During the testing, "going out" had been defined as "going out of the house, with family, girl friends, and/or boy friends".

Table 21

Responses to "What Would You Most Like to do at School?"

Variable Ranked First	Gr.7	Gr.8	Gr.9	Gr.10	Gr.11	Total
Good Grades	76.6%	68.2%	75.0%	71.2%	71.6%	72.9%
Good at Sports	8.8%	11.8%	9.5%	15.1%	7.8%	10.2%
Being Popular	14.5%	20.0%	14.3%	13.7%	20.6%	16.7%

The subjects' perceptions of what made them popular are presented in Table 22. Here, the rankings were extremely consistent across the grade levels except for the three exceptions noted. In order of importance for popularity were being good looking, making good grades, being good at sports, being in the leading crowd, and having lots of money.

Table 22

Perceptions of What Makes Subjects Popular

Attribute	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11
Good looking	2.35[a]	2.41	2.57	2.46	2.29
Good grades	2.68	2.56	2.57	3.04	2.75
Good at sports	2.77	2.77	2.73	2.80*	3.12
Leading crowd	3.04	3.07	2.72	2.62*	2.81*
Money	4.27	4.19	4.47	4.10	4.03

*Ranking out of order with remainder of grades.

[a] The value represents the average ranking between 1 and 5 for the factors. A lower value represents a higher ranking.

Holland's Self Directed Search included six interest dimensions which are presented in order of preference in Table 23. As with the ranking of activities question, the social dimension was the most preferred by all grades. The artistic dimension contained such items as going to concerts, drawing, painting, and reading poetry, and was second in popularity. Bookkeeping, filing, typing, and operating business machines were the main activities in the third choice, the conventional dimension. Enterprising activities included owning one's own business, meeting important people, and selling items. The investigative dimension listed such activities as working in a lab, working on rocket models, taking chemistry, physics, biology, and geometry courses. Finally, the least

Table 23

Ranking of Interest Dimensions

Dimension	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
Social	.75[a]	.75	.74	.76	.77
Artistic	.71	.68	.69	.70	.69
Conventional	.56	.53	.53	.56	.55
Enterprising	.52	.52	.54	.54	.50
Investigative	.51	.51	.50	.49	.38
Realistic	.41	.48	.49	.43	.51*

*Ranking out of order with remainder of grades.

[a] The value represents the average score between 0 (no activities liked) and 1.0 (11 activities liked) for each of Holland's SDS interest dimensions.

popular interest area was the realistic area. It included fixing electrical and mechanical items, repairing motorcycles, and driving trucks.

Summarizing the findings of the activities and interests questions, it would seem that sports (physical activity) hold a subordinate position in adolescent girls' hierarchy of values compared to social activities. Social activities were the most preferred of the 11 activities ranked, with sports following at fourth place. As far as aspirations at school were concerned, good grades were most highly valued but a social variable, being popular, was ranked above being good at sports. The girls also perceived a socially related variable, being good looking, as the factor that made them most popular among their friends. These results indicate the value placed on social factors such as going out, dating boys, being popular and good looking. They would seem to be more important for adolescent girls than participating and excelling in sports.

Chapter 6

ANALYTICAL RESULTS

ANALYSIS OF PARTICIPATION

The first question addressed by the study was whether there were differences in physical activity participation across the five grade levels. To assess the differences, the participation variables (interschool teams, intramural activities, community organized activities, average hours per day, total activities, and frequency of favourite activities) were compared in combination using a multivariate analysis of variance and individually with a univariate analysis of variance for both year 1 and year 2.

Participation Variables Combined

The multivariate analysis of variance tested the null hypothesis that the mean vectors of the participation variables[25] were the same for the five grades. Only complete cases were used in the analysis, that is, only cases with all six participation variables present. Hence, only 464 cases (70.2 percent of sample) were included in the year 1 analysis, and 478 cases (83.1 percent of sample) in the year

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[25] The mean vectors consist of the means of each of the six participation variables. The multivariate analysis of variance compares the mean vectors for each grade as opposed to a univariate analysis of variance which compares single means.

2 analysis. Table 24 gives the mean vectors for each of the 5 grades for year 1. There were significant differences among the grades (F ratio = 8.42, $p < .001$). The year 2 mean vectors for each of the five grades are outlined in Table 25. There were also significant differences among the five grades (F ratio = 11.01, $p < .001$).

The multivariate analysis of variance indicated that there was an overall difference in participation mean vectors among the five grades. Post hoc tests were performed to determine between which pairs of grades the differences occurred. Tables 26 and 27 give the Mahalanobis distance[26] between the mean vectors for each pair of grades for year 1 and year 2 respectively. In year 1, the Grade 6 and 7 mean vectors and the Grade 8 and 9 mean vectors were not significantly different at the .05 level. Again in year 2, the Grade 8 and 9 mean vectors were not significantly different, and neither were the Grade 10 and 11 mean vectors. Therefore, participation on the six participation variables combined was similar for Grades 6 and 7, Grades 8 and 9, and Grades 10 and 11, compared over the 2 years of the study.

Participation between the other pairs of grades was significantly different. To further analyze the data, post hoc tests were done to determine on which participation vari-

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[26] The Mahalanobis distance is a measure of the distance between mean vectors for a pair of grades. This distance can be compared to the F distribution to determine statistical significance.

Table 24

Multivariate Analysis of Participation Vector Means
Year 1

Participation Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
Interschool	1.32 (5)[c]	1.51 (3)	1.69 (2)	1.86 (1)	1.38 (4)
Intramural	3.54 (3)	3.58 (2)	3.32 (4)	3.90 (1)	1.86 (5)
Organized	1.92 (3)	2.04 (2)	1.85 (4)	1.76 (5)	2.14 (1)
Hours	4.14 (1)	3.71 (2)	2.82 (3)	2.51 (5)	2.66 (4)
Favourite Frequency[a]	2.64 (1)	2.66 (2)	2.67 (3)	2.89 (5)	2.77 (4)
Total Activities	11.61 (4)	11.95 (3)	12.40 (1)	12.34 (2)	11.34 (5)
No. Subjects included in Analysis[b]	137	83	65	83	96

[a] Favourite frequency values are in reverse order. A low score indicates a high value.

[b] N of total sample used in calculations = 464. The MIDAS program included only cases with complete data for all six variables.

[c] The numbers in brackets indicate each grade's rank on the values of the participation variables.

Table 25

Multivariate Analysis of Participation Vector Means
Year 2

Participation Variable	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11
Interschool	1.38 (4)[c]	1.71 (2)	1.71 (1)	1.22 (5)	1.45 (3)
Intramural	3.70 (2)	3.85 (1)	3.40 (3)	1.56 (5)	2.01 (4)
Organized	1.92 (2)	2.07 (1)	1.84 (3)	1.76 (5)	1.82 (4)
Hours	3.67 (1)	3.19 (2)	2.86 (3)	2.15 (4)	2.03 (5)
Favourite Frequency[a]	2.82 (2)	2.87 (3)	2.81 (1)	2.90 (5)	2.89 (4)
Total Activities	12.71 (1)	12.66 (2)	12.21 (41)	12.53 (3)	12.13 (5)
No. Subjects Included in Analysis[b]	158	99	77	59	85

[a] Favourite frequency values are in reverse order. A low score indicates a high value.

[b] N of total sample used in calculations = 478. The MIDAS program included only cases with complete data for all six variables.

[c] The numbers in brackets indicate each grade's rank on the values of the participation variables.

Table 26

Mahalanobis Distance Between Participation Vectors
Year 1

Comparison of Grades	Distance Squared	F Statistic	Significance
6-7	.13	1.12	.349
6-8	.89	6.49	.001
6-9	1.47	12.51	.001
6-10	2.02	18.79	.001
7-8	.42	2.50	.022
7-9	.83	5.66	.001
7-10	1.58	11.61	.001
8-9	.32	1.93	.074
8-10	1.09	6.97	.001
9-10	2.16	15.82	.001

Table 27

Mahalanobis Distance Between Participation Vectors
Year 2

Comparison of Grades	Distance Squared	F Statistic	Significance
7-8	.32	3.20	.004
7-9	.63	5.41	.001
7-10	3.54	25.09	.001
7-11	2.88	26.25	.001
8-9	.23	1.64	.134
8-10	3.37	20.53	.001
8-11	2.38	17.96	.001
9-10	2.22	12.21	.001
9-11	1.36	9.08	.001
10-11	.19	1.08	.376

ables these pairs of grades differed. The comparison for each pair of grades can be found in Appendix O (p.293). For both years of the study, the pairs of grades differed significantly only for the variables, average hours per day and intramural activities. In all instances, the lower grade of the pairs of grades had the higher value on these two participation variables. In other words, the average hours per day in activity and the number of intramural activities was greater in the lower grades.

Individual Participation Variables

Separate univariate analyses of variance were performed on each of the six participation variables for each year. Tables 28 and 29 outline the means for each variable, the F ratio, and level of significance for years 1 and 2 respectively.

For both years, the participation variables, interschool teams, intramural activities, and average hours per day, were significantly different between the five grade levels. Examining the number of interschool teams, it appears that participation increased throughout junior high school and then dropped off in Grade 10, the beginning of senior high school. However, in Grade 11 of year 2 of the study, the number of interschool teams again increased. A similar pattern can be observed with the other school-related participation variable, intramural activities. Participation was consistently high throughout junior high school with an average of more than two activities per person. However, in Grade 10 it dropped off dramatically. Again in Grade 11 of year 2 of the study, intramural activities increased in number.

The third significantly different variable among the five grades, average hours per day, showed a consistent decline in value over the five grade levels for both years of the study.

The one-way analysis of variance indicated overall differences among the grades on the three participation variables mentioned. Post hoc tests (Scheffe contrasts) were performed to determine between which individual grades the differences occurred. These results are also included in Tables 28 and 29.[27]

Comparison of Year 1 and Year 2

The values of the participation variables from year 1 and year 2 were compared to examine further the differences in participation as the girls matured. This was done by performing a one-way analysis of variance with repeated measures, and by calculating the difference scores between year 1 and year 2.

A one-way analysis of variance with repeated measures

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[27] The letters beside the grade numbers on the tables indicate subsets of grades which do not differ significantly when compared using Scheffe contrasts. For example, for interschool teams (Table 28), the means of Grades 6, 7, and 10 were not statistically different (A), neither were the means of Grades 8 and 9 (B), nor were the means of Grades 7, 8, and 10 (C).

Table 28

Comparison of Participation Variables by Grade Year 1

Participation Variable	Grade[c]	Number of Activities	Standard Deviation	F Statis.	Signif.
Interschool[a] Teams	6(A)	1.25(5)[d]	.72	10.60	.001
N = 654	7(A,C)	1.41(3)	.66		
	8(B,C)	1.62(2)	.87		
	9(B)	1.79(1)	.88		
	10(A,C)	1.34(4)	.74		
	Total	1.44	.79		
Intramural[a] Activities	6(A)	3.42(4)	1.84	28.55	.001
N = 656	7(A)	3.72(1)	1.60		
	8(A)	3.44(3)	1.49		
	9(A)	3.69(2)	1.48		
	10(B)	1.86(5)	1.22		
	Total	3.24	1.72		
Community[a] Organized Activities	6	1.94(3)	1.03	1.27	.279
N = 647	7	1.96(2)	1.04		
	8	1.81(4)	.88		
	9	1.73(5)	.91		
	10	1.97(1)	1.06		
	Total	1.90	1.00		
Average Hours Per Day	6(A)	4.26(1)	2.40	16.25	.001
N = 585	7(A,C)	3.72(2)	2.33		
	8(B,C)	2.93(3)	2.05		
	9(B)	2.62(5)	1.68		
	10(B)	2.64(4)	1.72		
	Total	3.38	2.22		

Table 28 (continued)

Participation Variable	Grade	Number of Activities	Standard Deviation	F Statis.	Signif.
Total Activities	6	10.79(4)	4.94	1.16	.328
N = 658	7	11.24(3)	4.98		
	8	11.78(1)	5.46		
	9	11.65(2)	4.70		
	10	10.78(5)	4.36		
	Total	11.16	4.90		
Frequency of Favourite Activities[b]	6	3.16(2)	.75	.46	.762
N = 649	7	3.12(3)	.75		
	8	3.17(1)	.84		
	9	3.05(5)	.74		
	10	3.09(4)	.77		
	Total	3.12	.76		

[a] Coded Values:
1. no activities
2. one activity
3. two activities
4. three activities
5. four or more activities

[b] Coded Values:
1. less than once a month
2. at least once or twice a month
3. once a week or every weekend
4. at least two or three times a week
5. every day without fail in season

[c] The letters indicate homogeneous subsets whose highest and lowest means do not differ by more than the shortest significant range for a Scheffe contrast at the .05 level.

[d] The numbers in brackets indicate each grade's rank on the values of the participation variables.

Table 29

Comparison of Participation Variables by Grade Year 2

Participation Variable	Grade[c]	Number of Activities	Standard Deviation	F Statis.	Signif.
Interschool[a] Teams	7(A)	1.34(4)[d]	.63	8.08	.001
N = 575	8(B)	1.66(1)	.95		
	9(B)	1.66(2)	.90		
	10(A)	1.16(5)	.43		
	11(A,B)	1.38(3)	.77		
	Total	1.43	.78		
Intramural[a] Activities	7(A)	3.69(2)	1.40	65.37	.001
N = 575	8(A)	3.75(1)	1.46		
	9(A)	3.30(3)	1.62		
	10(B)	1.48(5)	1.02		
	11(B)	1.89(4)	1.14		
	Total	2.99	1.63		
Community[a] Organized Activities	7	1.89(2)	.98	2.22	.066
N = 572	8	2.01(1)	1.07		
	9	1.83(3)	1.03		
	10	1.64(5)	.83		
	11	1.71(4)	1.02		
	Total	1.84	1.00		
Average Hours Per Day	7(A)	3.65(1)	1.72	22.186	.001
N = 534	8(A,B)	3.07(2)	1.83		
	9(C,B)	2.82(3)	1.42		
	10(C,D)	2.13(4)	1.19		
	11(D)	2.01(5)	1.28		
	Total	2.90	1.69		

Table 29 (continued)

Participation Variable	Grade[c]	Number of Activities	Standard Deviation	F Statis.	Signif.
Total Activities	7	12.25(2)	4.54	.85	.494
N = 571	8	12.26(1)	4.67		
	9	11.90(3)	4.42		
	10	11.40(5)	5.00		
	11	11.50(4)	4.83		
	Total	11.94	4.67		
Frequency of[b] Favourite Activities	7	3.14(2)	.71	2.37	.052
N = 572	8	3.02(3)	.69		
	9	3.17(1)	.71		
	10	2.90(5)	.78		
	11	2.98(4)	.81		
	Total	3.06	.74		

[a] Coded Values:
1. no activities
2. one activity
3. two activities
4. three activities
5. four or more activities

[b] Coded Values:
1. less than once a month
2. at least once or twice a month
3. once a week or every weekend
4. at least two or three times a week
5. every day without fail in season

[c] The letters indicate homogeneous subsets whose highest and lowest means do not differ by more than the shortest significant range for a Scheffe contrast at the .05 level.

[d] The numbers in brackets indicate each grade's rank on the values of the participation variables.

(ANOVAR)[28] examined the participation variables for the two years of the study combined. The results are presented in Table 30. The ANOVAR procedure first examined grade differences by combining the means for each grade for the two years and indicating whether the combined means were significantly different (F by grade). As reported for the individual one-way analysis of variance, the variables, interschool teams, intramural activities, and average hours per day, were significantly different. To examine year differences, all the grade means for each year were combined and an F ratio calculated (F by year) to indicate whether overall participation on the various participation variables was different for the two years. Intramural participation, average hours per day, and frequency of favourite activities were all significantly lower in year 2. There were no significant differences by year for the number of interschool teams, the number of community organized activities, and the number of total activities.

The ANOVAR also examined the interaction effect of grades and years, and found the interactions of interschool teams, intramural activities, and total activities significantly different. The participation variables are plotted for each subject group in Figure 2. The significant interaction indicated that the effect of year on participation not only depended on

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[28] A one-way analysis of variance with repeated measures is similar to a two-way analysis of variance (grade by year) except that the same subjects are represented in both years of the analysis. The participation variables are repeated each year for each subject, hence the name, repeated measures.

Table 30

Comparison of Year 1 and Year 2 Participation Variables

Variable	Mean Year 1	Mean Year 2	St. Dev. Year 1	St. Dev. Year 2	Combined Mean	F by Grade	F by Year	F Interaction
INTERSCH	N = 572							
Gr. 6	1.28	1.34	.76	.63	1.31	4.85	1.51	16.47
7	1.38	1.66	.64	.96	1.52	p = .001*	p = .22	p = .001*
8	1.66	1.66	.89	.90	1.66			
9	1.78	1.16	.89	.43	1.47			
10	1.34	1.39	.74	.78	1.36			
Combined	1.44	1.44						
INTRAMUR	N = 572							
Gr. 6	3.46	3.69	1.83	1.40	3.57	40.14	55.77	56.27
7	3.70	3.74	1.59	1.46	3.72	p = .001*	p = .001*	p = .001*
8	3.58	3.30	1.45	1.62	3.44			
9	4.02	1.48	1.31	1.02	2.75			
10	1.91	1.90	1.25	1.14	1.90			
Combined	3.32	2.99						
ORGANIZ	N = 562							
Gr. 6	1.97	1.89	1.05	.98	1.93	1.62	3.65	1.62
7	1.96	1.98	1.04	1.06	1.97	p = .17	p = .057	p = .17
8	1.83	1.84	.90	1.04	1.84			
9	1.73	1.64	.89	.83	1.68			
10	1.98	1.71	1.08	1.02	1.85			
Combined	1.91	1.83						
HOURS	N = 477							
Gr. 6	4.29	3.65	2.22	1.66	3.97	21.94	25.02	1.41
7	3.91	3.03	2.36	1.86	3.47	p = .001*	p = .001*	p = .23
8	2.75	2.64	1.79	1.39	2.70			
9	2.62	2.19	1.62	1.20	2.40			
10	2.68	2.04	1.83	1.27	2.36			
Combined	3.44	2.86						
TOTALACT	N - 569							
Gr. 6	11.13	12.27	4.98	4.54	11.70	.36	1.55	2.44
7	11.44	12.26	5.00	4.67	11.85	p - .84	p - .21	p - .046*
8	12.01	11.90	5.19	4.42	11.96			
9	12.23	11.43	4.70	5.03	11.83			
10	11.18	11.50	4.33	4.83	11.34			
Combined	11.50	11.95						
FAVFREQ	N - 563							
Gr. 6	3.18	3.13	.74	.71	3.15	1.76	8.03	.42
7	3.16	3.01	.73	.68	3.09	p - .14	p - .005*	p - .80
8	3.20	3.14	.81	.69	3.17			
9	3.09	2.90	.69	.78	2.99			
10	3.11	2.98	.76	.81	3.04			
Combined	3.15	3.05						

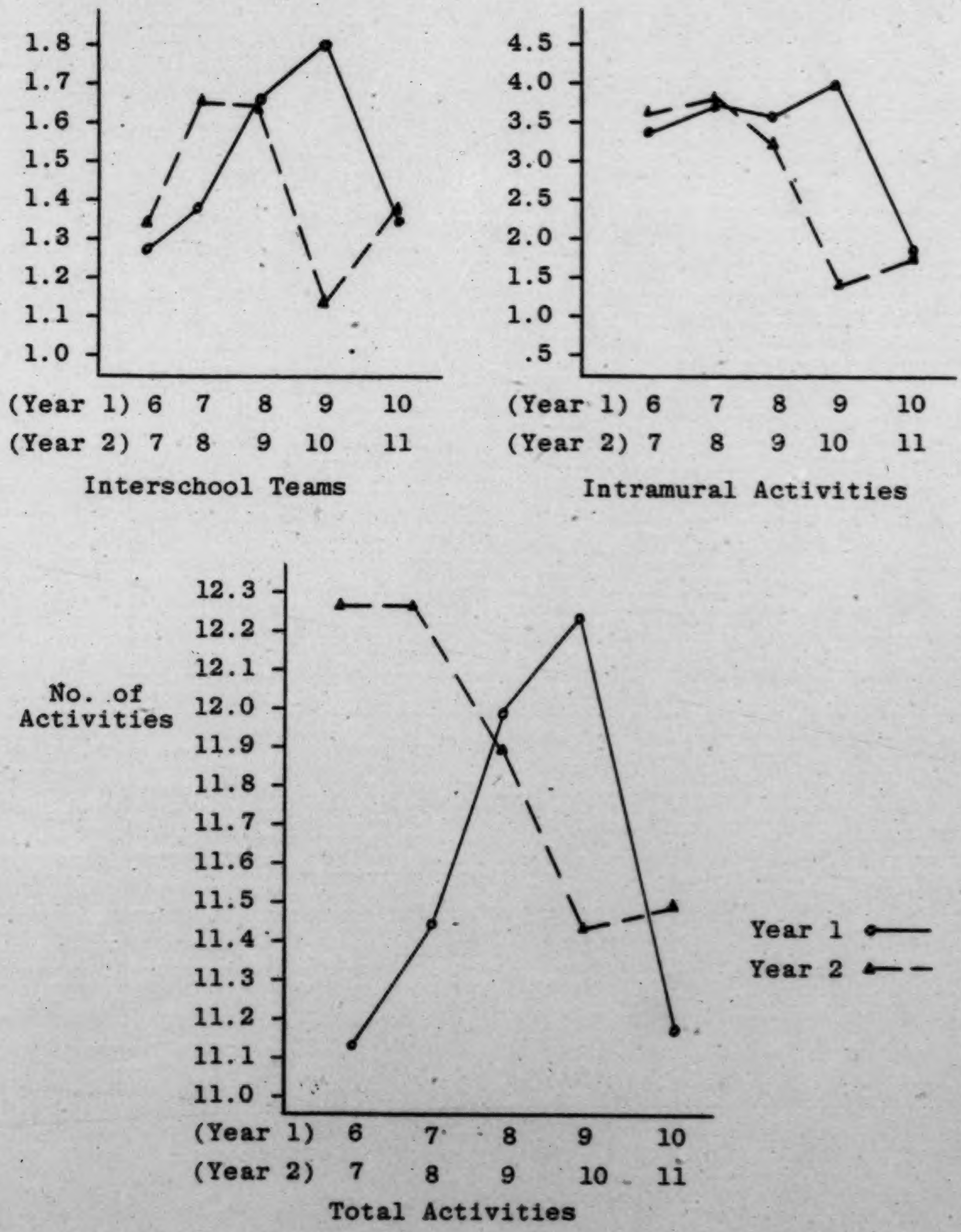
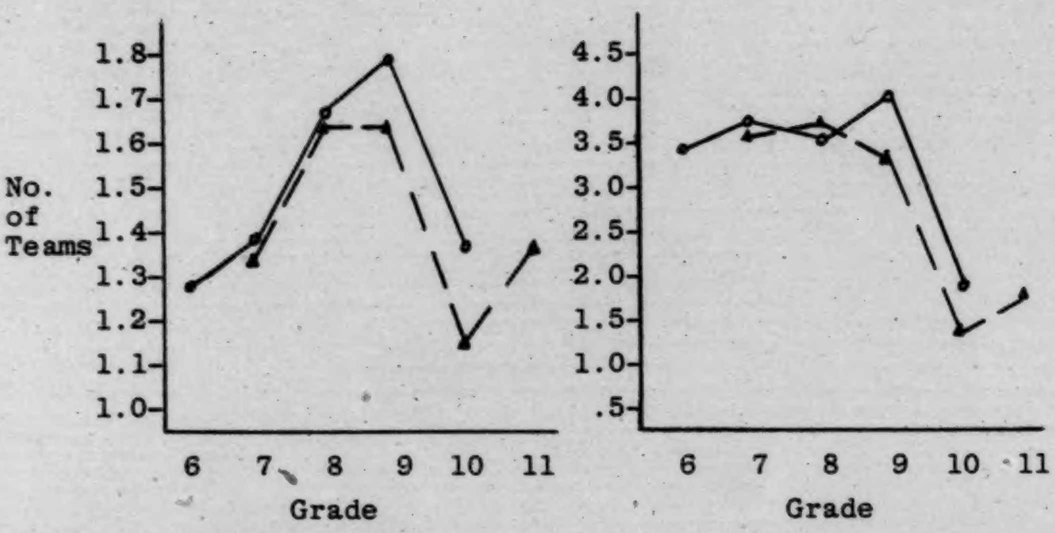


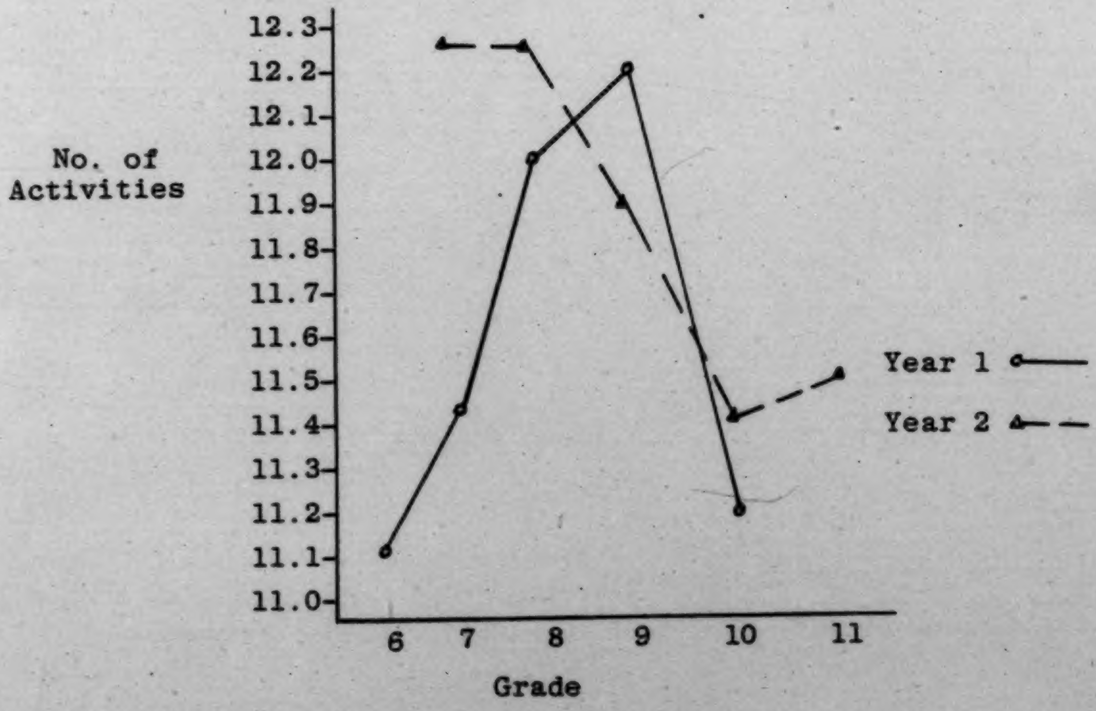
Figure 2

Significant Interactions of Participation Variables

Aligned by Subject Group



Interschool Teams Intramural Activities



Total Activities

Figure 3

Significant Interactions of Participation Variables Aligned by Grade the value of the year (whether year 1 or year 2), but on the grade that the subject was in. For interschool teams, intramural activities, and total activities, the interaction effect of year and grade on participation was significant because of the consistent changes in participation when the students moved from one grade to the next. These changes occurred in both year 1 and year 2 of the study, as demonstrated in Figure 3 where the participation values are aligned by grade rather than by subject group. The graphs in Figure 3 show quite clearly the drop-off in interschool and intramural participation at Grade 10 in both years of the study and a decline in total activities from Grade 8 onwards.

Difference scores were calculated for each of the participation variables, giving the differences in participation scores between year 1 and year 2. Tables 31 to 36 give frequencies of the difference scores by grade, and also the means for each grade. For interschool teams, it is interesting to note the stability of the variable from year 1 to year 2. Sixty-three percent did not change their level of interschool participation. The main changes occurred between Grades 7 and 8 where participation increased, and between Grades 9 and 10 where participation decreased dramatically. Intramural participation increased slightly in the lower junior high grades and decreased slightly in Grade 9. There was a dramatic drop-off in intramural activities in Grade 10 but little change in Grade 11.

Table 31

Interschool Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr.9-10	Gr. 10-11	Total[a]
Losers (N = 103)						
-3,-4	6	0	1	2	0	9
	3.3%	0.0%	1.1%	2.5%	0.0%	1.5%
-2	4	2	0	10	1	17
	2.2%	1.8%	0.0%	12.3%	0.9%	3.0%
-1	13	7	21	27	9	77
	7.2%	6.1%	23.3%	33.3%	8.5%	13.5%
No Difference (N = 361)						
0	117	75	47	39	83	361
	64.6%	65.8%	52.2%	48.1%	78.3%	63.1%
Gainers (N = 108)						
1	33	20	18	3	11	85
	18.2%	17.5%	20.0%	3.7%	10.4%	14.9%
2	6	8	3	0	1	18
	3.3%	7.0%	3.3%	0.0%	0.9%	3.1%
3, 4	2	2	0	0	1	5
	1.2%	1.8%	0.0%	0.0%	0.9%	0.8%
Mean[b]	.06	.28	.00	-.62	.05	-.004
St. Dev.	.99	.86	.82	.85	.59	.89

[a] $N = 572$

[b] $F = 13.91 \quad p < .001$

Table 32

Intramural Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr. 9-10	Gr. 10-11	Total[a]
Losers (N = 206)						
-3, -4	16 8.8%	4 3.6%	9 10.0%	48 58.6%	8 7.6%	85 14.9%
-2	9 5.0%	6 5.3%	7 7.8%	9 11.0%	5 4.7%	36 6.3%
-1	24 13.3%	18 15.9%	13 14.4%	14 17.1%	16 15.1%	85 14.9%
No Difference (N = 224)						
0	72 39.8%	56 49.6%	40 44.4%	10 12.2%	46 43.4%	224 39.2%
Gainers (N = 142)						
1	24 13.3%	18 15.9%	13 14.4%	1 1.2%	13 12.3%	69 12.1%
2	13 7.2%	5 4.4%	5 5.6%	0 0.0%	14 13.2%	37 6.5%
3, 4	23 12.7%	6 5.4%	3 3.3%	0 0.0%	4 3.8%	36 6.3%
Mean[b]	.23	.04	-.28	-2.55	-.01	-.33
St. Dev.	1.81	1.35	1.48	1.52	1.52	1.83

[a] $N = 572$

[b] $F = 48.59$ $p < .001$

Table 33

Community Organized Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr. 9-10	Gr. 10-11	Total[a]
Losers (N - 151)						
-3	3	1	0	0	0	4
	1.7%	0.9%	0.0%	0.0%	0.0%	0.7%
-2	8	4	2	3	13	30
	4.5%	3.5%	2.4%	3.8%	12.1%	5.3%
-1	38	21	19	17	22	117
	21.2%	18.6%	22.9%	21.3%	20.6%	20.8%
No Difference (N - 304)						
0	93	61	48	46	56	304
N = 304	52.0%	54.0%	57.8%	57.5%	52.3%	54.1%
Gainers (N = 107)						
1	28	18	9	12	13	80
	15.6%	15.9%	10.8%	15.0%	12.1%	14.2%
2	6	7	2	2	3	20
	3.4%	6.2%	2.4%	2.5%	2.8%	3.6%
3, 4	3	1	3	0	0	7
	1.7%	0.9%	3.6%	0.0%	0.0%	1.3%
Mean[b]	-.08	.03	.01	-.09	-.27	-.08
St. Dev.	.99	.95	1.02	.78	.93	.95

[a] N = 562

[b] F = 1.64 $p < .163$

Table 34

Total Activities Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr. 9-10	Gr. 10-11	Total[a]
Losers (N = 197)						
-10 to -17	5 2.8%	2 1.7%	3 3.3%	2 2.5%	1 1.0%	13 2.3%
-6 to -9	17 9.4%	8 7.0%	8 8.9%	8 10.0%	6 5.8%	47 8.3%
- 2 to -5	24 13.3%	30 26.1%	25 27.8%	29 36.3%	29 27.9%	137 24.1%
No Difference (N = 143)						
-1	16 8.9%	10 8.7%	6 6.7%	5 6.3%	13 12.5%	50 8.8%
0	12 6.7%	7 6.1%	8 8.9%	7 8.8%	11 10.6%	45 7.9%
1	16 8.9%	14 12.2%	6 6.7%	4 5.0%	8 7.7%	48 8.4%
Gainers (N = 229)						
2-5	60 33.3%	23 20.0%	22 24.4%	14 17.5%	20 19.2%	139 24.4%
6-9	25 13.9%	16 13.9%	10 11.1%	10 12.5%	15 14.4%	76 13.4%
10-21	5 2.8%	5 4.4%	2 2.2%	1 1.3%	1 1.0%	14 2.5%
Mean[b]	1.14	.82	-.11	-.80	.32	.46
St. Dev.	5.42	5.28	4.99	4.59	4.43	5.07

[a] $N = 569$

[b] $F = 2.53$ $p < .04$

Table 35

Hours Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr. 9-10	Gr. 10-11	Total[a]
Losers (N = 157)						
-5.5 to -9	6 4.0%	8 8.1%	1 1.5%	2 2.9%	2 2.2%	19 4.0%
-3.5 to 5.4	14 9.3%	10 10.1%	2 3.1%	2 2.9%	5 5.3%	33 6.9%
-1.5 to 3.4	38 25.3%	22 22.2%	14 21.5%	10 14.7%	21 22.1%	105 22.0%
No Difference (N = 194)						
-.1 to 1.4	22 14.7%	20 20.2%	13 20.0%	20 29.4%	21 22.1%	96 20.1%
0	13 8.7%	7 7.1%	9 13.8%	17 25.0%	21 22.1%	67 14.0%
.1 to .5	10 6.7%	2 2.0%	4 6.2%	7 10.3%	8 8.4%	31 6.5%
Gainers (N = 126)						
.6 to 3	38 25.3%	24 24.2%	21 32.3%	9 13.2%	16 16.8%	108 22.6%
3.1 to 5	8 5.3%	6 6.1%	1 1.5%	1 1.5%	1 1.1%	17 3.6%
5.1 to 7	1 0.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 0.2%
Mean[b]	-.64	-.88	-.11	-.43	-.64	-.59
St. Dev.	2.52	2.74	1.94	1.56	1.86	2.26

[a] N = 477

[b] F = 1.24 p < .291

Table 36

Favourite Frequency Difference Scores by Grade

Difference Scores	Gr. 6-7	Gr. 7-8	Gr. 8-9	Gr. 9-10	Gr. 10-11	Total[a]
Losers (N = 151)						
-2.25 to -3	2 1.1%	1 0.9%	3 3.4%	0 0.0%	1 0.9%	7 1.2%
-1.25 to -2	17 9.6%	14 12.6%	5 5.7%	11 13.8%	12 11.3%	59 10.5%
-.75 to -1	24 13.5%	20 18.0%	11 12.5%	15 18.8%	15 14.2%	85 15.1%
No Difference (N = 265)						
-.25 to -.50	46 25.8%	22 19.8%	26 29.5%	18 22.5%	32 30.2%	144 25.6%
0	19 10.7%	18 16.1%	8 9.1%	9 11.3%	10 9.4%	64 11.4%
.01 to .25	18 10.1%	6 5.4%	12 13.6%	8 10.0%	13 12.3%	57 10.1%
Gainers (N = 147)						
.50 to 1	34 19.1%	19 17.1%	16 18.2%	16 20.0%	13 12.3%	98 17.4%
1.25 to 2	15 8.4%	10 9.0%	4 4.5%	3 3.8%	7 6.6%	39 6.9%
2.25 to 4	3 1.7%	1 0.9%	3 3.4%	0 0.0%	3 2.8%	10 1.8%
Mean[b]	-.05	-.15	-.06	-.19	-.13	-.11
St. Dev.	.95	.91	1.00	.85	.92	.93

[a] N = 563

[b] F = .43 $p < .786$

Community organized activities were fairly stable from year 1 to year 2 (54.1 percent had 0 difference scores) with the main change occurring in Grade 11. Participation decreased fairly consistently across the grade levels for average hours per day, except for Grade 10 where the decrease was less pronounced. The variable, total activities, had considerable variability in difference scores across the five grade levels. Grades 7, 8, and 11 gained in total activities while Grades 9 and 10 lost. The difference scores for frequency of favourite activities were reasonably similar for the five grades, all losing slightly in participation.

The multivariate analysis of variance indicated no differences in participation for Grades 6 and 7, 8 and 9, and 10 and 11 on the six participation variables combined. There were significant differences between Grades 7 and 8, and 9 and 10. Examining the difference scores for those two pairs of grades, a trend can be seen, as outlined in Table 37.

Table 37

Summary of Grade 7-8 and Grade 9-10
Difference Scores

Variable	Gr. 7-8 Difference	Gr. 9-10 Difference
Intersch	.28 increase	-.62 decrease
Intramur	.04 increase	-2.55 decrease
Organiz	.03 increase	-.09 decrease
Hours	-.88 decrease	-.43 decrease
Totalact	-.15 decrease	-.19 decrease
Favfreq	.82 increase	-.80 decrease

Participation tended to increase from Grades 7 to 8, except for a reduction in average hours per day, and to decrease between Grades 9 and 10.

Summary

After a review of the results of the various analyses of participation, the following summary can be made. There was a difference between grades in overall participation in physical activity, as measured by the six participation variables combined. The major differences occurred between Grades 7 and 8, where participation increased, and between Grades 9 and 10 where participation decreased. Physical activity participation was similar between Grades 6 and 7, Grades 8 and 9, and Grades 10 and 11.

Looking at the participation variables individually, there were no differences between grades on the number of community organized activities, the number of total activities, and the frequency of favourite activities. The differences occurred on the number of interschool teams, the number of intramural activities, and the average hours of participation per day. The number of interschool teams increased going into junior high and throughout junior high. It then dropped off in Grade 10 and remained stable in Grade 11. Intramural activities were consistently high throughout junior high and dropped off dramatically in Grade 10. They again remained stable in Grade 11. With regards to the average hours of participation per day, there was a steady decline with age.

RELATIONSHIP BETWEEN PARTICIPATION AND RELATED VARIABLES

The second major question addressed by the study was to determine what variables were related to participation in physical activity. The question was examined in three ways.

Canonical Correlation

A canonical correlation procedure was used to determine if the sets of variables as a whole were related sufficiently enough to proceed with further analyses. The canonical correlation procedure combines two sets of variables in such a way that the correlation between the two sets is maximized. Table 38 presents the canonical correlations between the participation variables and the related variables for the total sample. Wilk's Lamda provides a measure of the strength of the canonical correlations. This can be tested for statistical significance with the chi-square statistic. For the total sample, there were four canonical correlations that were significant beyond the .05 level. The canonical weights for the two sets of variables are presented in Appendix P (p. 296).

Canonical correlations were also performed for each of the grades individually. Their coefficients are presented in Table 39. The individual grade coefficients were somewhat

Table 38

Canonical Correlations Between the Participation and Related Variables for Total Sample

N = 333

Canonical Correlation	Wilk's Lamda	Chi-Square	Degrees of Freedom	Significance
.69	.22	482.44	162	.001
.54	.41	277.29	130	.001
.45	.58	171.01	100	.001
.36	.73	98.39	72	.019

higher than the total sample, probably because the confounding effect of grade was removed. However, the significance was lower, especially for Grade 7, because of the smaller sample sizes. The canonical weights for both sets of variables for the five grades are presented in Appendix P (p.296).

Table 39

Canonical Correlations Between the Participation and Related Variables by Grade

Grade	Size of Sample	Canonical Correlation	Wilk's Lamda	Chi-Square	Signif. df = 156
6	89	.80	.057	205.20	.004
7	58	.83	.017	162.93	.34
8	50	.93	.002	211.14	.002
9	68	.91	.009	237.96	.001
10	68	.86	.014	215.62	.001

The canonical correlations between the two sets of variables were high, indicating that the participation variables and the related variables were indeed related. Thus, further analyses to determine how the variables were related was warranted.

Individual Correlations

The next method of analysis used to examine the relationships between the two sets of variables was the calculation of individual correlations between each of the six participation variables and each of the related variables. The highest correlating variables with each of the six participation variables for the total sample (N = 661) are outlined in Table 40. The other variables correlating significantly with the participation variables for the total sample and for each grade separately are included in Appendix Q (p.299).[29]

Many of the related variables were significantly correlated at the .05 level, but most of the correlations were quite low. Perhaps this is because the variables had a restricted range of values which did not allow larger correlations. For example, the value range for interschool teams, intramural activities, community organized activities, and frequency of favourite activities was from one to five. The correlations do, though, give the relative strength of relationship between

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[29] The correlation matrix for all the variables included in the total sample factor analysis is presented in Appendix R (p.306).

Table 40

Individual Correlations of Participation and Related Variables for Total Sample

Variables Correlating with Interschool Teams	Coefficient	Variables Correlating with Intramural Activities	Coefficient
Satisfaction with sports skills	.26	Attitude toward competition	.18
Sex role	-.21[a]	Significant others' encouragement	.17
Significant Others' encouragement	.19	Satisfaction with sports skills	.15
Sports equipment	.18	Sex role	-.15[a]
Movement satisfaction	.14	Attitude toward training	.14
Self-esteem	-.14[b]	Socio-economic status	-.13
Tomboyism	.13		

Variables Correlating with Community Organized Activities	Coefficient	Variables Correlating with Total Activities	Coefficient
Mother's socialization	.36	Sports equipment	.37
Father's socialization	.30	Self-esteem	-.23[b]
Socio-economic status	.28	Sex role	-.23[a]
Movement satisfaction	.26	Movement satisfaction	.22
Satisfaction with sports skills	.25	Mother's socialization	.21
Significant others' participation	.22	Significant others' participation	.19
Significant others' encouragement	.20	Significant others' encouragement	.18
Acitivity preference	-.20[c]	Realistic interests	.16
Sports equipment	.20	Investigative interests	.16
Sex role	-.20	Attitude toward social	.16

Table 40 (continued)

Variables Correlating with Average Hours Per Day	Coefficient	Variables Correlating with Frequency of Favourite Activities	Coefficient
Mothers' socialization	.20	Satisfaction with sports skills	.21
Attitude toward competition	.18	Movement satisfaction	.19
Movement satisfaction	.17	Significant others' encouragement	.18
Fathers' socialization	.17	Sports equipment	.17
Attitude toward training	.15	Attitude toward training	.16
Satisfaction with sports skills	.14	Satisfaction with physical education	.15
		Attitude toward competition	.15
		Fathers' socialization	.15

[a] The sex role scores ranged from -1.88, which indicated high endorsement of "masculine" traits as measured by Bem's Sex Role Inventory, to +1.75, which indicated high endorsement of "feminine" traits measured by the same instrument. Therefore, when interpreting the sex role coefficient, a negative coefficient indicates a high endorsement of "masculine" traits, such as self-confidence, independence, and assertiveness, while a positive coefficient indicates a high endorsement of "feminine" traits.

[b] The self-esteem score is inverted. A low score indicates high self esteem.

[c] The activity preference score is inverted. A low score indicated a preference for active, moving activities.

the participation and the related variables.

It is interesting to note that the same variables were consistently correlated highest with each of the six participation variables. These included: satisfaction with sports skills, movement satisfaction, self-confident, independent, and assertive self-descriptions, socialization variables--mother's and father's socialization influence and significant others' encouragement, sports equipment, and attitude toward training and competition.

Factor Analysis

The six participation variables and 26 related variables were included in a principal components factor analysis to supplement the individual correlations and to investigate how the variables would be combined into factors. The factors[30] from the factor analysis of the total sample and the five grades separately are presented in Tables 41 to 46.[31] There

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[30] Only factors whose eigenvalues were greater than 1.0 are presented in the tables. The percentages of variance shown are the percentages of the variance of all the variables in the sample, not just the variance accounted for by the factors presented. (The latter case is the one often reported in factor analytic studies, making this explanation necessary). For example, for the total sample, Factor 1 accounted for 18.6 percent of all the variables' variance. This would be 29.8 percent (18.6/total variance accounted for by the 11 factors--62.4) of the variance accounted for by the 11 factors with eigenvalues greater than one.

[31] Only variables having a coefficient of .25 or above are presented for each factor with the exception of a few participation variables.

Table 41

Factors from Total Sample Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Attitude toward Phys. Act. (18.6%)		Factor 2 - Socialization Influence (8.3%)		Factor 3 - Self-Perception (6.0%)	
Health	.76	Fathsoc	.87	Movesat	.80
Pasocial	.73	Mothsoc	.85	Bodycat	.78
Competit	.68	Sotpart	.76	Facmov2	.71
Image	.67	Sothenc	.67	Esteem	-.59
Beauty	.65	[p]Organiz	.22	Physed	.50
Release	.63			Facmov1	.39
Training	.60			Facmov3	.26
Thrill	.58			Sex Role	-.23
Physed	.32				
Factor 4 - School Activities (5.2%)		Factor 5 - Opportunity Set (4.3%)		Factor 6 - Active Interests (4.1%)	
[p]Intramur	.68	Equipmen	.69	Investig	.75
[p]Intersch	.68	[p]Total act	.63	Realist	.73
Sex Role	-.42	Facmov1	-.35	Sex Role	-.36
Favmov1	.38	Facmov2	.30	Tomboy	.28
Facmov3	-.29				
[p]Totalact	.25				
Factor 7 - Activity Preference (3.7%)		Factor 8 - Socioeconomic Status (3.3%)		Factor 9 - Secondary Involvement (3.2%)	
Actpref	-.65	SES	.79	Secinv	.72
Tomboy	.64	[p]Organiz	.60	Livevent	.64
Facmov1	.40	[p]Intramur	-.36	Physed	.27
Realist	.30			[p]Intersch	.25
Livevent	.29			[p]Favfreq	.22
Movesat	.29				
Factor 10 - Participation Variables (3.0%)		Factor 11 - Hours in Activity (2.9%)			
[p]Favfreq	.70	[p]Hours	.85		
Facmov3	.58	[p]Totalac	.27		
[p]Organiz	.27	Training	.25		
Facmov2	-.26				

[p]Participation Variable

Table 42

Factors from Grade 6 Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Attitude toward Phys. Act. (16.7%)		**Factor 2 - Socialization Influence (9.6%)**		**Factor 3 - Active Interests (6.6%)**	
Image	.73	Fathsoc	.87	Realist	.71
Competit	.72	Mothsoc	.86	Investig	.55
Health	.71	Sotpart	.75	Tomboy	.50
Pasocial	.69	Sothenc	.74	Sex Role	-.44
Beauty	.68	Livevent	.26	SES	-.37
Release	.63	[P]Organiz	.23	Facmov3	-.35
Training	.45			[P]Organiz	.32
Thrill	.36			[P]Intramur	-.27
Tomboy	-.30				
Factor 4 - Self-Perception (5.2%)		**Factor 5 - Self-Perception (4.9%)**		**Factor 6 - Activity Preference (4.3%)**	
Facmov1	.77	Facmov2	.81	Actpref	-.73
Esteem	-.46	Bodycat	.78	[P]Organiz	.46
Movesat	.45	Movesat	.73	Facmov3	.38
Sex Role	-.44	Physed	.45	SES	.37
Physed	.34	Esteem	-.35	Livevent	.35
		Facmov3	.32	[P]Intramur	-.33
		SES	.30		
Factor 7 - (3.9%)		**Factor 8 - Opportunity Set (3.6%)**		**Factor 9 - School Activities (3.4%)**	
Thrill	.67	[P]Totalact	.73	[P]Intersch	.86
Training	.58	Equipmen	.73	[P]Intramur	.36
SES	-.47	[P]Intramur	.38	Physed	.35
Facmov3	.28	Sex Role	-.35	Livevent	.30
Livevent	.25	Release	.28	Facmov3	-.28
		Livevent	.27		
Factor 10 - Participation Variables (3.2%)		**Factor 11 - Secondary Involvement (3.1%)**		**Factor 12 - Hours in Activity (3.0%)**	
[P]Favfreq	.66	Secinv	.83	[P]Hours	.76
[P]Intramur	.41	Physed	.30	Esteem	-.33
Livevent	-.39	Facmov3	.26	[P]Totalact	.31
Beauty	.38	[P]Organiz	.25		
Facmov3	.33				

[P] Participation Variable

Table 43

Factors from Grade 7 Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Attitude toward Phys. Act. (19.4%)		**Factor 2 - Socialization Influence (9.3%)**		**Factor 3 - Self-Perception (6.8%)**	
Health	.77	Fathsoc	.90	Facmov2	.78
Beauty	.74	Mothsoc	.86	Physed	.60
Competit	.73	Sotpart	.72	Bodycat	.57
Image	.70	Sothenc	.45	Movesat	.48
Release	.65	[p]Intersch	.34	Esteem	-.49
Thrill	.64	Livevent	.26	Health	.29
Pasocial	.63	[p]Organiz	.23	[p]Favfreq	-.27
Training	.57			Secinv	.26
Physed	.26			Pasocial	.25
Factor 4 - Opportunity Set (5.8%)		**Factor 5 - Active Interests (5.3%)**		**Factor 6 - Participation Variables (4.6%)**	
SES	.81	Facmov3	-.81	Secinv	.75
[p]Totalact	.55	Investig	.76	[p]Favfreq	.71
Bodycat	-.39	Realist	.28	Training	.36
[p]Organiz	.38			[p]Totalact	.28
Equipmen	.36				
Sotpart	.30				
Factor 7 - School Activities (3.9%)		**Factor 8 - Activity Preference (3.8%)**		**Factor 9 - Movement Satisfaction (3.6%)**	
[p]Intramur	.78	Sex Role	-.78	Facmov1	.86
[p]Intersch	.48	Esteem	-.49	Movsat	.71
[p]Hours	-.32	Livevent	.47	Actpref	-.59
Equipmen	.30	Realist	.38	[p]Organiz	.46
Sothenc	.27	Tomboy	.31	Physed	.42
		[p]Organiz	.31	Realist	.41
				[p]Intersch	.30
				Bodycat	.30
				Thrill	.27
				Competit	.27
				[p]Hours	.26
Factor 10 - Hours in Activity (3.5%)		**Factor 11 - (3.1%)**			
[p]Hours	.65	Tomboy	.71		
Equipmen	.62	[p]Organiz	-.45		
Sothenc	.55	Pasocial	.35		
[p]Totalact	.39	Release	.35		
Mothsoc	.27	Sotpart	.25		
Realist	.25	Thrill	.25		
		Image	-.25		

[p] Participation Variable

Table 44

Factors from Grade 8 Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Attitude toward Phys. Act. (21.8%)		Factor 2 - Socialization Influence (8.1%)		Factor 3 - Self-Perception (6.5%)	
Health	.77	Sotpart	.86	Bodycat	.80
Pasocial	.75	Fathsoc	.82	Movesat	.77
Image	.68	Mothsoc	.73	Facmov2	.69
Release	.67	Sothenc	.53	Esteem	-.66
Thrill	.66	Beauty	.39	^{P}Intersch	.43
Competit	.66	Facmov3	.37	Facmovl	.37
Beauty	.55	^{P}Favfreq	.34	Sex Role	.33
Training	.51	SES	.27	Facmov3	.31
Livevent	.25			Physed	.26
^{P}Favfreq	.24				
Factor 4 - Opportunity Set (6.0%)		Factor 5 - Activity Preference (5.8%)		Factor 6 - Active Interests (4.8%)	
^{P}Totalact	.77	Actpref	-.71	Realist	.79
Equipmen	.72	Facmovl	.57	Investig	.58
Sothenc	.42	Tomboy	.38	Sothenc	.35
Release	-.35	^{P}Organiz	.30	^{P}Favfreq	-.32
Esteem	-.26	Movesat	.29	Tomboy	.28
		Beauty	-.28		
		Competit	.26		
		Sothenc	.26		
Factor 7 - Socioeconomic Status (4.4%)		Factor 8 - School Activities (3.8%)		Factor 9 - (3.5%)	
SES	.79	^{P}Intramur	.79	Physed	.74
^{P}Organiz	.61	^{P}Intersch	.43	Training	.48
Competit	-.39	^{P}Favfreq	.36	Investig	.47
Sex Role	-.38	Sex Role	-.35	Secinv	.46
Facmov3	-.30	Facmov3	-.33	Facmovl	.29
		Facmovl	.25	Facmov3	-.27
		^{P}Totalact	.23	Sex Role	.26
Factor 10 - Secondary Involvement (3.2%)		Factor 11 - Hours in Activity (3.1%)			
Livevent	.77	^{P}Hours	.85		
Secinv	.58	Tomboy	.52		
^{P}Intersch	.53	^{P}Totalact	.27		
^{P}Organiz	.46				
Sex Role	-.28				
Facmov3	.27				
Pasocial	.26				

^{P}Participation Variable

Table 45

Factors from Grade 9 Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Attitude toward Phys. Act. (22.8%)		Factor 2 - Socialization Influence (9.6%)		Factor 3 - Self-Perception (7.0%)	
Health	.81	Fathsoc	.88	Physed	.73
Image	.77	Mothsoc	.84	Bodycat	.70
Pasocial	.76	Sotpart	.73	Facmovl	.67
Competit	.74	Sothenc	.63	Movesat	.65
Training	.63	^{P}Organiz	.58	Esteem	-.42
Beauty	.59	Actpref	-.54	Thrill	.34
Release	.56	Secinv	.42	Equipmen	-.34
Thrill	.50	Equipmen	.37	Training	.29
Physed	.44	Facmovl	.34	Secinv	.27
^{P}Intramur	.34	SES	.34	Sex Role	-.26
Actpref	-.27	Livevent	.30		
		^{P}Hours	.29		
		Movesat	.28		
		Thrill	.26		
Factor 4 - Active Interests (4.9%)		Factor 5 - Movement Satisfaction (4.7%)		Factor 6 - (4.4%)	
Investig	.79	Facmov2	.85	Tomboy	.77
Realist	.65	Movesat	.50	Realist	.42
SES	-.34	^{P}Organiz	.37	SES	.34
Actpref	.31	Release	.36	Release	.30
Esteem	-.26	Bodycat	.33	^{P}Intersch	.28
Sothenc	.26	Esteem	-.32	Beauty	-.28
Factor 7 - Participation Variables (3.9%)		Factor 8 - Secondary Involvement (3.7%)		Factor 9 - Participation Variables (3.6%)	
^{P}Totalact	.83	Favmov3	.80	^{P}Favfreq	.81
Sex Role	-.56	Livevent	.53	^{P}Intramur	.51
Esteem	-.40	Secinv	.31	Equipmen	.45
^{P}Intersch	.34	SES	-.28	^{P}Organiz	.36
^{P}Intramur	.32	^{P}Intersch	-.26	Secinv	.36
Factor 10 - Participation Variables (3.2%)					
^{P}Hours	.72				
SES	-.46				
^{P}Intersch	.41				
^{P}Intramur	.38				

^{P} Participation Variable

Table 46

Factors from Grade 10 Factor Analysis

Variable	Factor Loading	Variable	Factor Loading	Variable	Factor Loading
Factor 1 - Self-Perception (20.7%)		**Factor 2 - Socialization Influence (8.9%)**		**Factor 3 - Attitude toward Phys. Act. (6.8%)**	
Movesat	.84	Mothsoc	.90	Competit	.76
Bodycat	.83	Fathsoc	.89	Training	.73
Facmov2	.70	Sotpart	.75	Health	.69
Esteem	-.66	Sothenc	.70	Pasocial	.62
Facmovl	.43	^{p}Favfreq	.28	Physed	.53
Facmov3	.41	Beauty	.26	Beauty	.51
^{p}Totalact	.38	SES	.24	Thrill	.32
^{p}Intramur	.35	^{p}Organiz	.23	Facmovl	.31
Physed	.30	^{p}Intramur	.22		
Sotpart	.27				
Actpref	-.25				
Factor 4 - Structured Activities (5.9%)		**Factor 5 - Secondary Involvement (4.7%)**		**Factor 6 - Active Interests (4.6%)**	
^{p}Intersch	.81	Secinv	.69	Equipmen	.73
^{p}Organiz	.53	Livevent	.68	Realist	.64
SES	.50	^{p}Favfreq	.45	^{p}Totalact	.54
Facmovl	.48	Physed	.33	Investig	.53
^{p}Intramur	.46	Sothenc	.31	Tomboy	.27
Sex Role	-.40	Actpref	-.29	Sex Role	-.25
Actpref	-.29	^{p}Hours	.26		
Investig	.28				
Movesat	.27				
Factor 7 - Activity Preference (4.1%		**Factor 8 - (3.9%)**		**Factor 9 - Attitude toward Phys. Act. (3.5%)**	
Tomboy	.70	Release	.70	Image	.71
Facmovl	.50	Thrill	.53	Actpref	-.49
Realist	.37	^{p}Totalact	.40	Pasocial	.44
Actpref	-.37	SES	-.40	Beauty	.33
Beauty	-.36	^{p}Intramur	.38	Release	.25
Facmov2	-.26	Sex Role	-.28	^{p}Intramur	.24
		Physed	.26		
Factor 10 - Participation Variables (3.2%)		**Factor 11 - Hours in Activity (3.0%)**			
Facmov3	.66	^{p}Hours	.77		
^{p}Favfreq	.53	Thrill	.44		
^{p}Organiz	.53	Sex Role	.38		
Investig	-.40	Investig	.30		
Sex Role	.27	Esteem	.26		
		Physed	-.26		

^{p}Participation Variable

were very similar factor structures in each of the five grades. The following factors were consistently represented for the total sample and each grade separately:

1. Attitude toward Physical Activity: All seven attitude toward physical activity variables and the "image of the female athlete" (all semantic differential scales) loaded on this factor for the total sample and all individual grades. This factor accounted for the most variance of all the factors in all grades except Grade 10 where it split into two separate factors. Participation variables did not load on this factor with the exception of frequency of favourite activities in Grade 8 and intramural activities in Grade 9.

2. Socialization Influence: All four socialization variables (significant others' participation, significant others' encouragement, mother' socialization influence, and father's socialization influence) loaded on this factor for the total sample and all the grades. The number of community organized activities loaded consistently with this factor.

3. Self Perception: The following variables loaded consistently on the Self Perception factor: general movement satisfaction, body cathexis, self-esteem, sex role orientation,[32] satisfaction with sports skills, satisfaction with everyday movement, and satisfaction with movement to music (movement

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[32] A negative coefficient for self-esteem indicates high self-esteem. A negative coefficient for sex role orientation indicates an endorsement of "masculine" traits such as self-confidence, independence, and assertiveness.

satisfaction factors one, two and three). In Grade 6 these variables split into two self perception factors and in Grade 10 this factor accounted for the most variance of all the factors.

4. Active Interests: Realistic and investigative interests, tomboyism, and high endorsement of "masculine" traits loaded fairly consistently on the Active Interests factor.

5. Activity Preference: The Activity Preference factor quite consistently included the activity preference,[33] tomboyism, satisfaction with sports skills, realistic interests, and general movement satisfaction variables. No participation variables loaded with this factor.

6. Opportunity Set: Both amount of sports equipment and number of total activities loaded highly on this factor, for the total sample and all five grade levels except Grade 9.

7. Socio-economic Status: The total sample factor analysis and Grade 8 produced a Socio-economic Status factor with community organized activities loading on it. These same two variables also loaded together in Grades 6, 7, and 10 on various other factors.

In addition to the above factors, there were a number of participation factors that appeared in the factor analyses. Two of these participation factors were quite consistent across the five grade levels.

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[33] A negative coefficient for activity preference indicates a preference for active, moving activities.

1. School Activities: The School Activities factor consistently included the participation variables, inter-school teams and intramural activities. Several other variables loaded on this factor. High scores on the "masculine" items of Bem's Sex Role Inventory, and satisfaction with sports skills seemed to have a positive relationship with the School Activities factor, while satisfaction with movement to music seemed to have a negative relationship.

2. Secondary Involvement: The total sample and all the grades except Grade 7 had a Secondary Involvement factor which included the variables, secondary involvement (watching television, listening to radio, and reading newspaper) and attendance at live sports events. Other participation variables loaded on this factor for various grades.

The other participation variables tended to cluster in various combinations, so they were named Participation Variables factors. Frequency of favourite activities consistently had the highest loading with this factor and seemed to be accompanied by the variable, satisfaction with movement to music. The participation variable, average hours per day, consistently loaded very high by itself and so that factor was named the Hours in Activity factor. It accounted for very little variance of the sample.

The variables from the factor analysis that loaded with the participation variables replicates very closely the variables that had the highest individual correlations with the participation variables. The similarities between the two analyses for the total sample can be seen quite clearly in Table 47. For the first four participation variables, interschool teams, intramural activities, community organized activities, and total activities, the results are very similar between the two analyses. For the remaining two variables, average hours per day, and frequency of favourite activities, the results are not as clear-cut and hence are more difficult to interpret.

Summary

The following summary of the relationships between the six participation variables and the related variables is based on a review of Table 47.

1. Interschool Teams: Satisfaction with sports skills (movement satisfaction factor one) and high scores on the "masculine" items of Bem's Sex Role Inventory loaded most highly with participation on interschool teams in the factor analysis. These were also the two variables that had the highest individual correlations with interschool teams. Other positively related variables were significant others' encouragement, amount of sports equipment, and general movement satisfaction.

2. Intramural Activities: Satisfaction with sports skills (movement satisfaction factor one) and high scores on

Table 47

Summary of Relationships Between Participation and Related Variables for Total Sample

Participation Variable	Highest Correlating Variables	Factors & Variables Loaded With
Interschool Teams	Satisfaction with sports skills .26	School Activities Factor
	Sex role -.21	(Sex role -.42) (Sports skills .38)
	Significant others' encouragement .19	
	Sports equipment .18	
	Movement satisfaction .14	
Intramural Activities	Attitude toward competition .18	
	Significant others' encouragement .17	
	Satisfaction with sports skills .15	School Activities Factor
	Sex role -.15	(Sex role -.42) (Sports skills .38)
	Attitude toward training .14	Socio-economic Status Factor -.36
	Socio-economic status -.13	
Community Organized Activities	Mother's socialization .36	Socialization Influence Factor .22
	Father's socialization .30	
	Socio-economic Status .28	Socio-economic Status Factor .60
	Movement satisfaction .26	Participation Variables Factor (Movement to music .58)
	Satisfaction with Sports skills .25	

Table 47 (continued)

Participation Variable	Highest Correlating Variables		Factors & Variables Loaded With
Total Activities	Sports equipment	.37	Opportunity Set Factor (Equip. .69)
	Self-esteem	-.23	
	Sex role	-.23	School Activities Factor (Sex role -.42) (Sports skills .38)
	Movement satisfaction	.22	
	Mother's socialization	.21	
Average Hours per Day	Mother's socialization	.20	
	Attitude toward competition	.18	
	Movement satisfaction	.17	Hours in Activity Factor (Total activities .27) (Training .25)
	Father's socialization	.17	
	Attitude toward training	.15	
Frequency of Favourite Activities	Satisfaction with sports skills	.21	Participation Variables Factor (Movement to music .58)
	Movement satisfaction	.19	
	Significant others' encouragement	.18	
	Sports equipment	.17	
	Attitude toward training	.16	

the "masculine" items of Bem's Sex Role Inventory also loaded most highly with participation in intramural activities in the factor analysis and had high individual correlations. Attitude toward competition and training, and significant others' encouragement were the other variables with high individual correlations. Socio-economic status was negatively related.

3. Community Organized Activities: The factors most related to the number of community organized activities were the Socialization Influence and Socio-economic Status factors. Of the socialization variables, mother's socialization influence had the highest individual correlation with participation in community organized activities and father's socialization influence had the second highest. Socio-economic status, general movement satisfaction, and satisfaction with sports skills (movement satisfaction factor one) also had high individual correlations.

4. Total Activities: The total number of activities was significantly correlated with more related variables than any other participation variable, although many of the correlations were not consistent across the five grade levels. The variable that loaded most often with total activities in the factor analysis was amount of sports equipment. It also had a very high individual correlation. The number of total activities also loaded with the School Activities factor and

had high individual correlations with high scores on the "masculine" items of Bem's Sex Role Inventory, self-esteem, general movement satisfaction, and mother's socialization influence.

5. Average Hours Per Day: The participation variable, average hours per day, seemed to load on a factor by itself. No related variables loaded consistently with it. The variables with the highest individual correlation ranks were mother's socialization influence, attitude toward competition, general movement satisfaction, father's socialization influence, and attitude toward training.

6. Frequency of Favourite Activities: Frequency of favourite activities tended to load with other participation variables and with a variety of related variables, although most often with satisfaction with movement to music. The variables with the highest individual correlations were satisfaction with sports skills, general movement satisfaction, significant others' encouragement, sports equipment, and attitude toward training.

COMPARISON OF FACTORS AND VARIABLES BY GRADE

Comparison of Factors by Grade

In order to quantitatively compare the factors for the five grade levels, a one-way analysis of variance was performed for each of the 11 factors derived in the total sample factor analysis. Table 48 presents the means of the 11 factors for

Table 48

Comparison of Factors by Grade

Factor	Gr. 6 Mean	Gr. 7 Mean	Gr. 8 Mean	Gr. 9 Mean	Gr.10 Mean	Total Mean	F. Ratio	Signif.
Attitude toward Physical Activity	.10	.00	-.16	-.08	.05	.00	1.29	.27
Socialization Influence	.06	.21	-.07	-.16	-.11	.00	2.64	.03*
Self Perception	.06	.01	-.05	.07	-.13	-.00	.81	.52
School Activities	-.00	.15	.17	.48	-.68	.01	21.68	.001*
Opportunity Set	-.45	-.03	.26	.27	.38	.01	19.85	.001*
Active Interests	.03	.10	.07	-.07	-.12	.00	.93	.44
Activity Preference	-.08	-.05	.10	-.02	.11	-.00	.89	.47
Socio-economic Status	-.10	-.08	-.03	-.08	.39	.00	5.03	.001*
Secondary Involvement	-.13	-.18	-.02	.05	.38	-.00	5.98	.001*
Participation Variables	.13	.11	.02	-.07	-.21	.01	2.51	.04*
Hours in Activity	.41	.14	-.18	-.33	-.44	-.01	20.39	.001*

each of the five grades. Four of the non-activity factors (Attitude toward Physical Activity, Self Perception, Active Interests, and Activity Preference) were not significantly different among the five grade levels. The four activity factors (School Activities, Secondary Involvement, Participation Variables, and Hours in Activity) were significantly different among the five grade levels. The differences in the participation factor values across the grade levels were very similar to the differences in the individual participation variables (Table 28 and 29, p.125 and p.127). The School Activities factor showed the increase in school activities through Grade 9 and the dramatic drop-off in Grade 10. The Secondary Involvement factor showed a steady increase in value as the girls got older while the Participation Variables and Hours in Activity factors showed a steady decrease from Grade 6 to Grade 10.

Two of the remaining factors (Opportunity Set and Socio-economic Status) had their highest values in Grade 10. The Opportunity Set factor increased steadily throughout the five grades while the Socio-economic Status factor was fairly stable throughout junior high school and then showed a large increase in Grade 10. The last factor, Socialization Influence, had its highest value in Grade 7 and then decreased from there.

Comparison of Related Variables by Grade

The related variables that were significantly different among the five grade levels are presented in Table 49. For

Table 49

Comparison of Related Variables by Grade

Variable	Gr. 6 Mean	Gr. 7 Mean	Gr. 8 Mean	Gr. 9 Mean	Gr.10 Mean	Total Mean	F. Ratio	Sig.
Realistic Interests	.41	.48	.49	.43	.51	.46	3.31	.011
Investigative Interests	.51	.51	.50	.49	.38	.48	5.70	.001
Satisfaction with Sports Skills	.18	.02	-.07	.01	-.27	.003	4.34	.002
Body Cathexis	3.69	3.59	3.47	3.51	3.44	3.57	5.48	.001
Attitude to Training	5.09	5.03	4.92	5.02	4.76	4.98	3.55	.007
Attitude to Competition	5.81	5.59	5.49	5.45	5.24	5.55	8.10	.001
Satisfaction with Physical Education	3.75	3.66	3.55	3.53	3.58	3.64	5.23	.001
Significant Others' Encouragement	4.57	4.84	4.73	4.70	4.57	4.67	2.49	.042
Father's Socialization Influence	4.50	4.57	4.25	4.11	4.27	4.37	4.21	.002
Mother's Socialization Influence	4.40	4.44	4.22	3.99	4.20	4.28	3.97	.003
Socio-economic Status	2.16	2.67	2.60	2.53	2.95	2.53	5.44	.001

the variables, satisfaction with sports skills, body cathexis, attitude toward training, and attitude toward competition, there was a gradual decline from Grade 6 to Grade 10. Father's and mother's socialization influence declined through Grade 9 and then increased slightly in Grade 10. Significant others' encouragement was highest for the junior high grades, but satisfaction with physical education was lowest. Realistic interests (mechanical, manual, and technical interests) seemed to increase from Grade 6 to Grade 10, but investigative interests (interests in the areas of science and mathematics) declined abruptly in Grade 10. Finally, socioeconomic status improved gradually from Grade 6 to Grade 10. It is interesting to note that many of the variables that were most related to participation in physical activity were the ones that were also significantly different between grades.

Comparison of Variables between Year 1 and Year 2

A one-way analysis of variance with repeated measures was calculated for the related variables to compare the total sample means of the variables from year 1 and year 2 (F by Year).[34]

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[34] The analysis of variance with repeated measures also combined the year 1 and year 2 value for each grade and then compared values between the grades (F by Grade). The variables that were significantly different among the five grade levels in the analysis of variance with repeated measures (F by Grade column of Appendix S) were almost identical to the significantly different variables from the one-way analysis of variance (Table 49). However, the means for year 1 of the repeated measures analysis are slightly different because that analysis could only use cases with complete data from both years.

This was done as the beginning of a longitudinal analysis of the variables' values from one year to the next. The results are presented in Appendix S (p.311). The following variables had significantly different total sample means between year 1 and year 2:

1. Investigative interest dimension of Holland's SDS--year 1 higher.
2. Artistic interest dimension of Holland's SDS--year 1 higher.
3. Movement satisfaction--year 2 higher.
4. Self-esteem--year 2 higher.
5. Attitude toward physical activity as an aesthetic experience--year 1 higher.
6. Attitude toward physical activity for competition--year 1 higher.
7. Father's socialization influence--year 1 higher.
8. Mother's socialization influence--year 2 higher.

The participation variables' difference scores (the difference in value between year 1 and year 2) were presented in an earlier section of this chapter. The difference scores for the related variables will not be included here because of space restrictions. However, they can be calculated by subtracting the year 2 means from the year 1 means presented in the one-way analysis of variance with repeated measures (Appendix S, p.311).[35]

The correlations of the participation variables' difference scores with the related variables' difference scores yielded very few significant correlations for the total sample and little consistency for the five grades individually. Therefore, they are not presented in the dissertation.

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[35] For example, the average difference score for the variable, Realist, was .05 in Grade 6, -.04 in Grade 7, 0 in Grade 8, -.03 in Grade 9, -.05 in Grade 10, and -.01 for the total sample.

Chapter 7

CONCLUSIONS AND DISCUSSION

The conclusions and discussion will be presented in two parts: differences in extent of physical activity participation and factors related to participation in physical activity.

DIFFERENCES IN EXTENT OF PARTICIPATION

Conclusions

For the purpose of this study, participation in physical activity was considered in three ways (competitive, organized, and recreational) and was measured by six different variables. These were the number of interschool teams, the number of intramural activities, the number of community organized activities, the number of total activities in which the girls participated, average hours of participation per day, and the frequency of four favourite activities.

Some of the participation variables differed with grade while other variables did not. The two school-related variables, interschool teams and intramural activities, had significant differences with grade, with the main drop-off occurring at Grade 10 when the girls reached senior high school. Two other variables, number of community organized activities and number of total activities did not show differences with grade. The conclusion can be made that participation in competitive interschool sports and in school organized intramural activities does differ with grade, but that participation in community organized activities and the total number of activities does not differ with grade. It appears that adolescent girls continue to participate in the same number of community organized activities and total number of activities as they mature. The differences lie with the school-related activities.

Using the two variables, average hours per day and frequency of favourite activities, as representative of overall participation in physical activity, the study showed that total participation in physical activity did decrease from year 1 to year 2. The total sample means for both variables were lower in year 2 than in year 1, as indicated by the one-way analysis of variance with repeated measures. The same result was observed for the variable, average hours per day, when compared across grade levels with the simple one-way analysis of variance. Thus, it can be concluded that adolescent girls' overall participation in physical activity does decline with age.

The conclusions about the extent of adolescent girls' participation in physical activity can be summarized in the following three statements:

1. Total participation in physical activity among

adolescent girls decreased from Grade 6 to Grade 10.

2. Participation on interschool teams and intramural activities decreased when the girls reached senior high school.

3. Participation in community organized activities and in the total number of activities remained consistent from Grade 6 to Grade 10.

Discussion

The discussion about the extent of participation will include three areas: problems with measurement of participation, comparison with other studies, and a discussion of the results obtained in this study.

As mentioned in the review of literature, it is difficult to measure physical activity consistently for all subjects. Individuals have different interpretations of the meaning of physical activity and it is difficult to equate different kinds of activity. An example of this measurement problem can be seen in the activities listed by the subjects for the various seasons of the year. The Grade 6 and 7 subjects listed some children's games such as murderball, skipping, races/tag, dodgeball, playing in the snow, and snowball fights. The older girls listed more "adult" activities such as skiing, tennis, and badminton.

When measuring variables such as the number of total activities, the average hours per day, and the frequency of favourite activities, it is difficult to standardize the measurements. Can "play" activities such as skipping and playing in the snow be compared to more structured activities such as tennis and badminton? Perhaps the reason that the average hours per day was consistently higher in the lower grades was because of this "play" element. The girls in Grades 6 and 7 may have considered every activity they did as "physical activity".

Another problem with the participation variable, number of total activities, is determining the amount of time spent in each activity listed. The total number of activities was the same across the five grade levels, but the time spent on each one may not have been. The older girls probably spent less time on each one, as evidenced in their lower estimates of the average hours per day spent in physical activity. The lists of activities given in response to this question provided some useful descriptive information about the types of activities engaged in by younger and older girls.

The first three participation variables, interschool teams, intramural activities, and community organized activities, were very clearly defined and required a choice of one of five responses. The respondents were also asked to write in the names of their activities and these were cross-checked during the coding. Therefore, the responses to these three participation variables should have been more standardized and their results are easier to interpret.

The measurement of physical activity is also a problem when trying to compare results from various studies. Almost every investigator in the area has used a different method of measuring participation and it is difficult to equate these measurements. In this study, an attempt was made to measure various kinds of activity and the results did show differences in the different kinds.

Notwithstanding the above measurement problems, the results of this study can be compared with the results of other studies. For interschool teams, Butcher (1976a) reported that 44 percent of the physical education group (Grades 10 to 12) and 4.8 percent of the non-physical education group competed on one or more teams. The comparison with this study would have to be for the Grade 10 sample where 21.8 percent participated on at least one team. Bratton (1977) reported that 18 percent of his junior high sample (Grades 7 to 9) competed on at least one interschool team, as compared to 32.5 percent of Grade 7, 41.6 percent of Grade 8, and 53.9 percent of Grade 9 in this study.

For intramural activities, 79 percent of the Grade 7 to 9 girls in Bratton's (1977) study participated in at least one intramural activity. In this study, 80 percent of Grade 7, 87.1 percent of Grade 8, and 87.5 percent of Grade 9 participated in at least one activity.

Bratton (1977) reported that 39 percent of his Grade 7 to 9 sample competed on at least one community team as compared to 57.3 percent of Grade 7, 54.4 percent of Grade 8, and 49 percent of Grade 9 in this study who participated in at least one community organized activity. However, in this study community organized activities included not only competitive teams, but lessons in activities as well. The present study showed that 56.7 percent of the Grade 10 sample (average age of 15.5) participated in one or more community organized activities. This was almost equal to Kenyon's (1968c) study where 58 percent of 15 year old Canadian girls did so.

The average hours per day spent in physical activity in this study was somewhat higher than that reported by Hall (1975) for the 1972 Canadian survey and by Butcher (1976a). In year one of this study, the average participation per day for the Grade 10 sample (average age of 15.5) was 2.6 hours making an average of 18.2 hours of activity per week. The 1972 Canadian survey reported an average of only 2.3 hours per week for 14 to 17 year old girls, while Butcher (1976a) reported 11.7 hours for her physical education group (average age of 16.0) and 8.4 hours for her non-physical education group (average age of 16.5). The differences between these three studies could be explained in part by the different age groups involved. This study indicated a steady decline in average hours per day from ages 11 to 15. It would be expected that this decline would continue through ages 16 and 17, the ages involved in the other two studies, and would lower their average hours of activity per week.

Nevertheless, it would appear that the girls in this study had comparable or even better participation in physical activity than girls in other Canadian studies, in spite of their rather unique demographic backgrounds--almost entirely Catholic (96 percent), a large proportion of low socio-economic status, and a large proportion of ethnic backgrounds (see Table 14, p.97; Table 16, p.100). Luschen (1967) had shown the over-representation of Protestants as compared to Catholics in German sport. However, Greendorfer (1978b) in a comparison study of women involved in sport and women not involved in sport reported almost equal percentages of Catholics in both groups. The greater percentage of Protestants in the sport involvement group was due to a much smaller percentage of Jews. Therefore, the real difference was with the Jewish religious group who were substantially less involved in sport. Perhaps Catholics are becoming more involved in sport and physical activity. The present study would certainly indicate this trend.

There would seem to be a discrepancy in this study, however, regarding socio-economic status. The literature shows quite clearly that participation in physical activity is positively related to socio-economic status. The present data, though, shows that these girls had high levels of participation in spite of their low socio-economic status. This discrepancy is difficult to explain. Perhaps the school system that the girls attended was particularily encouraging of physical activity and provided opportunities for participation. At any rate, it should be noted that the Edmonton Catholic School District is a large publicly supported school system and should not be confused with the private school systems of other major cities.

Turning now to a discussion of the results obtained in this study, overall participation decreased from Grade 6 to Grade 10 as measured by the variables, average hours per day, and frequency of favourite activities. Differences were found in the number of interschool teams and intramural activities, but not in the number of community organized activities or the total number of activities. The question must be asked why the adolescent girls continued to participate in community organized activities but not in the school-related activities. Perhaps it was because of the decreased opportunities for participation in the senior high schools. The senior high schools in the sample had large enrolments and sponsored only one or two teams in each interschool activity. This would greatly restrict the number of girls who could participate. However, the same argument should not be used for the number of intramural activities. These activities within the school should be available to all girls who wanted them. It would be difficult to determine whether the lower participation in intramurals was due to a lack of interest on the part of the Grade 10 girls, or whether it was due to a lack of opportunities in the schools. In either case, schools would do well to examine this drastic decline in participation on interschool teams and in intramural activities when the girls reached Grade 10.

Another possible reason for the decline in school-related activities but not in community organized activities would be the emphasis of the program. Interschool teams, particularily, require intensive practice and competition and may not be appealing to certain girls. On the other hand, community organized activities such as community leagues and lessons in various activities are not quite as demanding, and may be better suited to maintaining the same level of participation throughout adolescence.

This difference in emphasis between school-related activities and community organized activities is supported to some degree by the variables correlating with both participation variables. Attitudes toward competition and training had relatively high correlations with intramural activities but not with community organized activities. It appears that girls who participate in intramural activities have positive feelings toward competition and training and are probably willing to exert the effort necessary to compete. Perhaps girls who do not have such positive feelings toward these aspects of physical activity drop out of intramural activities.

Butcher (1976a) examined the differences between high school girls who elected physical education and those who did not. One of the main differences was participation on interschool teams. Forty-four percent of the physical education group and only 4.8 percent of the non-physical education group competed on interschool teams. Another main difference between the two groups was the fact that the non-physical education group were unwilling to exert the effort necessary to compete seriously in sport, and hence preferred unorganized non-competitive physical activities. This may have been why they did not compete on interschool teams. The same factors may have been operating in this study.

Another important question arises as a result of the decline in physical activities from Grade 6 to Grade 10. What other activities took the place of physical activities? The rank of interests question gives some insight. From Grade 7 to Grade 11 (year two of study), "going out", visiting friends, and dating boys became more and more preferred while sports became less preferred. Therefore, it appears that adolescent girls spend more time in social activities and less in physical or sport activities. It would be enlightening to have a very detailed picture of how adolescent girls spend their time (a time use study) and of how their activities change as they get older. It would also be valuable to know why other activities take priority over physical activities.

FACTORS RELATED TO PARTICIPATION IN PHYSICAL ACTIVITY

Conclusions

The canonical correlation showed that the participation variables, as a set, were indeed related to the related variables, as a set. The individual correlations ranked the related variables' association with each of the participation variables. Finally, the factor analysis indicated which of the related variables and which of the participation variables loaded together on the same factors. Based on the results of the above analyses, the following conclusions can be made about the factors related to participation in physical activity:

1. Of the many variables included in the study, these variables had the highest relationship with participation in physical activity:

   a) Movement satisfaction, especially satisfaction with sports skills.

   b) Self-confident, independent, and assertive self-descriptions.

   c) Socialization variables including mother's socialization influence, father's socialization influence, and significant others' encouragement.

   d) Opportunity set including amount of sports equipment and socio-economic status.

e) Attitude toward physical activity for training and competition.

2. Certain related variables had stronger relationships with some participation variables than with others:

a) The school-related variables, number of interschool teams and intramural activities, were most related to satisfaction with sports skills and to self-confident, independent, and assertive self-descriptions.

b) Community organized activities were most related to mother's and father's socialization influence and to socio-economic status.

c) The total number of activities was most related to the amount of sports equipment available.

3. Several variables included in the study were not strongly related to participation in physical activity. These included:

a) Personal attributes: self-esteem, body cathexis, interest in different types of activities, tomboyism, activity preference.

b) Attitude toward subdomains of physical activity except toward training and competition.

c) Image of the female athlete.

Discussion

In the following discussion of the variables most related to the six participation variables, an attempt will be made to examine some of the problems with the measurement and analysis, to compare the results with other studies, and to give possible explanations for the results.

A number of measurement and analysis problems made interpretation of the results difficult. The conclusions from the study were based on the individual correlations of the related variables with the participation variables and on the factor analysis. As mentioned earlier, the individual correlations had quite low coefficients, possibly because of the restricted range of values of the variables. This makes it difficult to interpret differences in relationships based on a small value spread, for example, between a correlation coefficient of .15 and .16.

In the factor analysis, there was usually only one item that measured each variable, for example, one item for body cathexis, one item for self-esteem, and so on. Therefore, it was difficult to get high clusterings of variables on the same factor. Many factors had only one or two variables with high coefficients and it was difficult to interpret those factors. Two attitude toward physical activity variables had high individual correlations with the participation variables, but only two participation variables in two different grades loaded with these attitude variables in the factor analysis. This may have been because the attitude toward physical activity factor had a very strong instrument effect (semantic differential) preventing other variables from loading with it.

A final problem in interpreting the results of the study was the low reliability of some of the instruments. Perhaps the young age of the subjects with their limited reading and comprehension abilities was a factor. Nevertheless, the results of some of the instruments must be interpreted with caution because of the low reliability coefficients.

Each of the variables most related to different aspects of physical activity will now be discussed in relation to other research and with possible explanations. Satisfaction with sports skills was highly related to the school-related participation variables, interschool teams and intramural activities. It only seems reasonable that girls who are satisfied with their movement and especially with their sports skills will be more involved in those activities which use these skills. As mentioned in the discussion on the extent of participation, interschool teams in particular, and intramural activities, to a lesser extent, require a high level of physical skills and a dedication to work hard. It appears from the results that the type of individual that is attracted to competitive interschool teams and intramural activities is one who has satisfaction and confidence in her sports skills.

This finding was supported by Butcher's (1977) study where she compared the three movement satisfaction factors among girls on no interschool teams and girls on one or more interschool teams. The girls on interschool teams had significantly higher values on movement factor one, satisfaction with sports skills, than girls on no interschool teams. Butcher (1976a) also found that the girls who elected physical education (44 percent of whom were on interschool teams) had greater confidence in their physical ability than girls who did not elect physical education. This satisfaction with sports skills can also be related to Orlick's (1972) contention that participants need positive expectancies from sport--in this case, expectancies that they will do well.

The crucial question, now, is what contributes to movement satisfaction and how can movement satisfaction be enhanced. It appears that the time has come to stop examining personal attributes in psychological terms and to begin examining physical attributes that will enhance adolescent girls' satisfaction with their movement. What physical skills differentiate between girls who are satisfied with their movement and those who are not? How can these skills be developed so that more girls become satisfied with their movement and perhaps participate more in physical activity? These are some of the questions to which we should now be addressing ourselves.

Returning to the question of why girls dropped out of these two school-related variables so drastically when they reached Grade 10, the results of the one-way analysis of variance (Table 49, p. 164) showed a decline in satisfaction with sports skills as the girls got older. The Grade 10 value was considerably lower than the other grades. Thus, both participation on interschool teams and in intramural activities, and satisfaction with sports skills declined in Grade 10, adding support to the relationship between the two variables.

The other factor most related to the number of interschool teams and intramural activities was self-confident, independent, and assertive self-descriptions, evidenced by high scores on the "masculine" items of Bem's Sex Role Inventory. Myers and Lips (1978) also reported that women who participated in racquetball tournaments for the competition had higher "masculine" scores on the sex role inventory than women who were not interested in competing. Many of the "masculine" adjectives in the inventory such as competitive, ambitious, aggressive, willing to take risks, athletic, and ability to act as a leader, are also attributes required in competitive sports. Therefore, it is not surprising that girls who competed in sports also endorsed these attributes.

Based on these finding, the important questions remain, is it necessary to have these traits to participate in physical activity, to display oneself and one's abilities for others to see? If so, why are these traits developed in some adolescent girls and not in others? How can they be developed?

Two of the participation variables, the number of community organized activities and total activities were most related to the socialization and opportunity set variables (mother's and father's socialization influence, socio-economic status and amount of sports equipment). These socialization variables were also related somewhat to the two school-related variables, interschool teams and intramural activities, but not to the same degree as satisfaction with sports skills and self-confident, independent, and assertive self-descriptions. In fact, intramural activities were negatively related to socio-economic status.

It seems logical that socio-economic status and parental support would be necessary for participation in community organized activities and the total number of activities. The girls would need equipment, fees, and transportation to the site. This would require the parents to have the time, the money, and the conviction that the activities were worthwhile. For school-related activities, money and transportation would not be a limiting factor. The school activities would be more accessible to everyone. There is no charge for participation, the equipment and facilities are supplied, and the location is within a close distance of the students' homes.

McPherson, Guppy, and McKay (1976) had concluded that participation in physical activity was greater in higher social classes. This conclusion was supported in this study for community organized activities and to an extent for the number of total activities, because the amount of sports equipment would be related to socio-economic status. However, it was not true for the two school-related activities nor for the two variables measuring total participation in physical activity, average hours per day and frequency of favourite activities. This discrepancy in findings for different types of activities should caution researchers not to group different activities together.

The two variables, community organized activities and number of total activities, showed no differences in participation among the five grade levels. It would be valuable to determine why these participation variables did not decrease with age while the other four variables did so. Some possible reasons are discussed in the section on the extent of participation. Some other insight is provided by the factors related to these participation variables. Both socio-economic status and amount of sports equipment, the variables most related to community organized activities and total activities, were significantly higher in the higher grades (Table 49, p. 164; Table 48, p. 162 respectively). Perhaps this difference in the sample offset the other variables like movement satisfaction which tended to decline with age.

Significant others' encouragement was related to three of the participation variables, interschool teams, intramural activities and frequency of favourite activities. This variable included nine significant others (father, mother, older and younger brothers and sisters, best girl friends, boy friend, and favourite teacher/coach) and indicated the importance of all three major socializing agents (family, peers, and school) for socializing girls into physical activity. It is difficult to compare the relative effects of the three agents in this study because they were not examined separately. However, for three of the participation variables, community organized activities, total activities, and average hours per day, the individual correlation for mother's socialization influence was greater than father's socialization influence. This finding supports Smith's (1976) study where girls perceived more encouragement from mothers but contradicts Greendorfer and Lewko's (1978) study in which fathers were more influential.

Significant others' encouragement, mother's socialization influence, and father's socialization influence all declined in strength from Grade 6 to Grade 10 (see Table 49, p.164). The question arises, then, as to why significant others do not encourage girls to continue to participate in physical activity as they get older. Why is sport encouraged for girls at an early age but not as they mature? An understanding of the changing socialization influences on adolescent girls will no doubt contribute to an understanding of their participation in physical activity.

SUMMARY OF MAJOR FINDINGS

Extent of Adolescent Girls' Participation in Physical Activity

Overall participation in physical activity declined from Grade 6 to Grade 10 but in varying amounts for different types of activities. Participation in school-related activities, the number of interschool teams and intramural activities, decreased abruptly when the girls reached senior high school. Participation in community organized activities and total number of activities remained consistent from Grade 6 to Grade 10.

Factors Related to Participation in Physical Activity

Of the variables included in the study, five variables or factors were most related to participation in physical activity: movement satisfaction, especially satisfaction with sports skills; significant others' encouragement and socialization influence; opportunity set; self-confident, independent, and assertive self-descriptions; and attitude toward physical activity for training and competition.

These variables were more related to some types of physical activity than others. The school-related variables, number of interschool teams and intramural activities, were most related to satisfaction with sports skills and to self-confident, independent, and assertive self-descriptions. Community organized activities were most related to mother's and father's socialization influence and to socio-economic status. The total number of activities was most related to the amount of sports equipment available.

RECOMMENDATIONS FOR FURTHER STUDY

Based on the results of this study, a number of recommendations can be made for further research:

1. When researching participation in physical activity, all aspects of participation should be examined because the results vary for different types of participation. However, researchers should attempt to standardize the measurement of these various aspects so that comparisons between studies can be made. This has been done with some success internationally with physical fitness measurements.

2. Opportunities in school-related activities should be examined to determine if these opportunities decrease in senior high school.

3. The differences between school-related activities and community organized activities should be examined to determine if the latter are better meeting the needs of adolescent girls. This could be done with an in-depth interview study of participants in and dropouts from both programs.

4. The activities that replace physical activities in the adolescent girl's time frame should be investigated, along with the reasons these activities take priority over physical activities. This could be done with a detailed

time analysis of girls of various ages or preferably with the same girls over an extended period of time.

5. Based on the results of this study, several variables should be included in further research on the factors influencing adolescent girls' participation in physical activity. These include:

a) Movement satisfaction, especially satisfaction with sports skills.

b) Self-confident, independent, and assertive self-descriptions.

c) Socialization variables including mother's socialization influence, father's socialization influence, and significant others' encouragement.

d) Opportunity set including amount of sports equipment and socio-economic status.

e) Attitude toward physical activity for training and competition.

6. The factors that contribute to movement satisfaction should be examined, including ways of enhancing this satisfaction. One approach to this problem would be to examine the physical skills that differentiate between girls who are satisfied with their movement and those who are not.

7. An investigation should be made of the factors that contribute to the development of self-confident, independent, and assertive traits in adolescent girls.

8. Socialization variables should be examined carefully

to determine who the most influential significant others are as adolescent girls are becoming involved in physical activity--mother, father, peers, teachers/coaches. The reasons why significant others' encouragement for physical activity declines as girls get older should be investigated. Also, strategies that could be implemented to help significant others encourage adolescent girls to continue to participate in physical activity should be given some thought.

9. Finally, if a real understanding of adolescent girls' participation in physical activity is to take place, these girls must be followed through the years when they are maturing, to determine what variables are related to changes in participation. This calls for longitudinal studies over extended time periods.

RECOMMENDATIONS FOR PROGRAM IMPLEMENTATION

The results of this study suggest a number of recommendations that could be implemented in physical education and recreation programs for adolescent girls:

1. Every effort should be made to ensure that intramural and interschool programs are available to all girls who desire them.

2. The desirable aspects of community organized programs should be included in school-related programs and physical education classes.

3. Physical education programs should encourage the

development of movement satisfaction. This could be done in a number of ways: Firstly, an emphasis could be placed on the development of basic motor patterns such as running, jumping, throwing, catching, striking, and kicking in the elementary grades. Then, specific sports skills could be taught and practiced in junior high school so that the girls develop confidence in various sporting activities. These could be expanded to lifetime sports skills in senior high school. Throughout these programs, the emphasis should not be on competition or comparison with others, but on personal improvement.

4. Recreational and community programmers should strive to provide low-cost programs that would be feasible for girls from lower socio-economic backgrounds.

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APPENDIX A

The Questionnaire

☐ ☐☐☐1 (1-6)

THE UNIVERSITY OF ALBERTA

SURVEY OF STUDENT INTERESTS

General Instructions:

A. Do not write your name. Your answers will remain absolutely confidential. Ignore the numbers in the right column of each page. They are used for computer coding purposes only.

B. Please read the directions for each part of the questionnaire CAREFULLY.

C. This is not a test. There are no right or wrong answers. We are interested in YOUR interests and opinions.

D. This is a long questionnaire. Work as accurately and quickly as you can. Do not spend too much time on any single question. Answer all the questions in the order in which they occur.

E. Please note that questions appear on both sides of each page.

PART I: PERSONAL INTERESTS QUESTIONNAIRE

A. **Directions:** For each of the following questions rank the statements in order of what you believe. Put a 1 in front of the statement you believe is best or applies most to you, a 2 for the second best item, a 3 for the third best item, and so on.

Example: Which of the following fruits do you like best? Rank in order from 1 to 4.

2 Apple
4 Banana
1 Orange
3 Pear

1. Which of the following activities are you most interested in doing? Rank in order from 1 to 12.

____ "Going out" (8)
____ Listening to music (10)
____ Reading (12)
____ Dancing (14)
____ Visiting with friends (16)
____ Playing a musical instrument (18)
____ Playing sports (20)
____ Watching television (22)
____ Dating boys (24)
____ Participating in a club or organization (26)
____ Doing arts and crafts (painting, Macrame, etc) (28)
____ Other ______________________ (30)

2. What would you most like to do at school? Rank in order from 1 to 3.

____ Make good grades (33)
____ Be good at sports (34)
____ Be popular (35)

3. Which of the following would make you most popular among your friends? Rank in order from 1 to 5.

____ Making good grades (37)

____ Having lots of money

____ Being good at sports (39)

____ Being good-looking

____ Being in the leading crowd (41)

☐ ☐☐☐2 (1-6)

B. **Directions:** Below you will find many activities that you may or may not have done. We would like to know whether you like to do each activity or whether you would like to try the activity if you have never done it. For each activity circle the 1 if you like the activity or think you would like to do it. Circle the 2 if you dislike the activity or think you would not like to do it.

	Like	Dislike	
Example: Climb trees	[✓ 1]	2	
1. Fix electrical things	1	2	(8)
2. Sketch, draw or paint	1	2	
3. Influence others	1	2	(10)
4. Repair cars	1	2	
5. Attend plays	1	2	(12)
6. Sell something	1	2	
7. Fix mechanical things	1	2	(14)
8. Design furniture or buildings	1	2	
9. Discuss politics	1	2	(16)
10. Build things with wood	1	2	
11. Play in a band or orchestra	1	2	(18)
12. Attend conferences (meetings)	1	2	
13. Drive a truck or tractor	1	2	(20)
14. Practice a musical instrument	1	2	
15. Operate my own service or business	1	2	(22)
16. Use metal working or machine tools	1	2	
17. Go to recitals, concerts, or musicals	1	2	(24)
18. Give talks (speeches)	1	2	
19. Work on a hot rod or motorcycle	1	2	(26)
20. Read popular fiction	1	2	

	Like	dislike	
34. Read scientific books	1	2	(41)
35. Write letters to friends	1	2	(42)
36. Keep your desk neat	1	2	
37. Work in a laboratory	1	2	(44)
38. Attend religious services	1	2	
39. Type papers or letters	1	2	(46)
40. Work on a scientific project	1	2	
41. Belong to social clubs	1	2	(48)
42. Add numbers in business or bookkeeping	1	2	
43. Build rocket models	1	2	(5 0)
44. Help others with personal problems	1	2	
45. Operate business machines	1	2	(52)
46. Work with a chemistry set	1	2	
47. Take care of children	1	2	(54)
48. Keep detailed records of expenses	1	2	
49. Read about special subjects on my own	1	2	(56)
50. Go to parties	1	2	
51. Take typewriting course	1	2	(58)
52. Solve math or chess puzzles	1	2	

	Like	Dislike	
21. Serve as an officer of a group	1	2	(28)
22. Take shop course	1	2	
23. Create portraits or photographs	1	2	(30)
24. Supervise the work of others	1	2	
25. Take mechanical drawing course	1	2	(32)
26. Read Plays	1	2	
27. Meet important people	1	2	(34)
28. Take woodworking course	1	2	
29. Read or write poetry	1	2	(36)
30. Lead a group in accomplishing some goal	1	2	
31. Take auto mechanics course	1	2	(38)
32. Take art course	1	2	
33. Participate in political campaign	1	2	(40)

	Like	Dislike	
53. Dance	1	2	(60)
54. Take Business course	1	2	
55. Take physics course	1	2	(62)
56. Read psychology books	1	2	
57. Take bookkeeping course	1	2	(64)
58. Take chemistry course	1	2	
59. Attend meetings and conferences	1	2	(66)
60. Take commercial math course	1	2	
61. Take geometry course	1	2	(68)
62. Go to sports events	1	2	
63. File letters, reports, records	1	2	(70)
64. Take biology course	1	2	
65. Make new friends	1	2	(72)
66. Write business letters	1	2	

☐ ☐☐☐3 (1-6)

PART II: PERSONAL DESCRIPTION QUESTIONNAIRE

A. **Directions:** Below you will find several words or phrases used to describe people. We would like to know how well you feel each word or phrase describes you. Indicate how true of you each word or phrase is by circling the appropriate number according to the following scale:

1. Never or almost never true
2. Usually not true
3. Occasionally true
4. Usually true
5. Always or almost always true

	Never or almost never true	Usually not true	Occasionally true	Usually true	Always or almost always true	
Example: Fun-loving	1	[✓ 2]	3	4	5	
1. Self-reliant (relying on oneself)	1	2	3	4	5	(8)
2. Yielding (giving up easily)	1	2	3	4	5	
3. Helpful	1	2	3	4	5	(10)
4. Defends own beliefs	1	2	3	4	5	
5. Cheerful	1	2	3	4	5	(12)
6. Moody (changing moods quickly)	1	2	3	4	5	
7. Independent (not needing others)	1	2	3	4	5	(14)
8. Shy	1	2	3	4	5	
9. Conscientious (concerned about doing a good job)	1	2	3	4	5	(16)
10. Athletic	1	2	3	4	5	

	Never or almost never true	Usually not true	Occasionally true	Usually true	Always or almost always true	
11. Affectionate (expressing feelings)	1	2	3	4	5	(18)
12. Theatrical (dramatic)	1	2	3	4	5	
13. Assertive (stating one's rights)	1	2	3	4	5	(20)
14. Flatterable (easily flattered)	1	2	3	4	5	
15. Happy	1	2	3	4	5	(22)
16. Strong personality	1	2	3	4	5	
17. Loyal (standing by one's friends)	1	2	3	4	5	(24)
18. Unpredictable (not able to anticipate)	1	2	3	4	5	
19. Forceful (making your ideas known)	1	2	3	4	5	(26)
20. Feminine (things that girls usually do)	1	2	3	4	5	
21 Reliable (responsible - can depend on)	1	2	3	4	5	(28)
22. Analytical (thinking - figuring out problems)	1	2	3	4	5	
23. Sympathetic (warmhearted - concerned about others)	1	2	3	4	5	(30)
24. Jealous	1	2	3	4	5	
25. Has leadership abilities	1	2	3	4	5	(32)
26. Sensitive to the needs of others	1	2	3	4	5	
27. Truthful	1	2	3	4	5	(34)
28. Willing to take risks	1	2	3	4	5	
29. Understanding	1	2	3	4	5	(36)
30. Secretive (keeping your thoughts to yourself)	1	2	3	4	5	
31. Makes decisions easily	1	2	3	4	5	(38)
32. Compassionate (feels sorrow for troubles of others)	1	2	3	4	5	
33. Sincere (meaning what you say)	1	2	3	4	5	(40)
34. Self-sufficient (able to get along without help)	1	2	3	4	5	
35. Eager to soothe hurt feelings	1	2	3	4	5	(42)
36. Conceited (having an exaggerated opinion of oneself)	1	2	3	4	5	
37. Dominant (wanting to take control)	1	2	3	4	5	(44)
38. Soft-spoken (speaking gently)	1	2	3	4	5	
39. Likable	1	2	3	4	5	(46)
40. Masculine (things that boys do)	1	2	3	4	5	

	Never or almost never true	Usually not true	Occasionally true	Usually true	Always or almost always true	
41. Warm	1	2	3	4	5	(48)
42. Solemn (serious)	1	2	3	4	5	
43. Willing to take a stand	1	2	3	4	5	(50)
44. Tender	1	2	3	4	5	
45. Friendly	1	2	3	4	5	(52)
46. Aggressive (pushy)	1	2	3	4	5	
47. Gullible (believing easily)	1	2	3	4	5	(54)
48. Inefficient (taking a long time to do something)	1	2	3	4	5	
49. Acts as a leader	1	2	3	4	5	(56)
50. Childlike	1	2	3	4	5	
51. Adaptable (able to adjust to new situations)	1	2	3	4	5	(58)
52. Individualistic (leading your life in your own way)	1	2	3	4	5	
53. Does not use harsh language	1	2	3	4	5	(60)
54. Unsystematic (disorganized)	1	2	3	4	5	
55. Competitive	1	2	3	4	5	(62)
56. Loves children	1	2	3	4	5	
57. Tactful (saying the right thing)	1	2	3	4	5	(64)
58. Ambitious (strong desire to get ahead)	1	2	3	4	5	
59. Gentle	1	2	3	4	5	(66)
60. Conventional (usual-ordinary)	1	2	3	4	5	

B. Directions: Below you will find some statements about yourself. We would like to know how you feel about each statement. People differ widely in the way they feel about each statement. There are no right or wrong answers. (a) Read each statement carefully; (b) opposite the statement circle the number which best expresses your feeling about the statement according to the following scale:

1. strongly agree
2. agree
3. disagree
4. strongly disagree

	Strongly agree	Agree	Disagree	Strongly disagree	
Example: I am good looking.	1	[✓ 2]	3	4	
1. On the whole, I am satisfied with myself.	1	2	3	4	(69)
2. At times I think I am no good at all.	1	2	3	4	
3. I feel that I have a number of good qualities.	1	2	3	4	(71)
4. I am able to do things as well as most other people.	1	2	3	4	
5. I feel I do not have much to be proud of.	1	2	3	4	(73)
6. I certainly feel useless at times.	1	2	3	4	
7. I feel that I am a person of worth, at least on an equal plane with others.	1	2	3	4	(75)

	Strongly agree	Agree	Disagree	Strongly disagree	
8. I wish I could have more respect for myself.	1	2	3	4	
9. All in all, I am inclined to feel that I am a failure.	1	2	3	4	(77)
10. I take a positive attitude about myself.	1	2	3	4	
11. When I was younger, I was called a tomboy.	1	2	3	4	(79)
12. I would rather do quiet still activities, than active moving activities.	1	2	3	4	

☐ ☐☐☐4 (1-6)

PART III: MOVEMENT SATISFACTION QUESTIONNAIRE

Directions: On the following pages are listed a number of statements concerning human movement which are related to your ability to move. You are asked to indicate which abilities you are satisfied with exactly as they are, which things you worry about and would like to change if it were possible, and which things you have no feelings about one way or the other. Consider each item listed and circle the number after each item which best represents your feelings according to the following scale:

1. Have strong negative feelings against and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate or lucky.

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate	
Example: My ability to ski	1	[✓ 2]	3	4	5	
1. Pride in physical ability.	1	2	3	4	5	(8)
2. Other peoples' opinions about my ability to move well.	1	2	3	4	5	
3. Ability to learn physical skills easily.	1	2	3	4	5	(10)
4. Ability to maintain my balance when moving.	1	2	3	4	5	
5. Ability to participate in sport activity at an interschool level.	1	2	3	4	5	(12)
6. Ability to jump for height.	1	2	3	4	5	
7. Ability to run with speed.	1	2	3	4	5	(14)
8. Ability to arise from a chair without feeling awkward or clumsy.	1	2	3	4	5	
9. Ability to move freely without being inhibited (without feeling self-conscious).	1	2	3	4	5	(16)
10. Ability to pick up or carry things without dropping them.	1	2	3	4	5	
11. Ability to move rapidly whenever I wish to.	1	2	3	4	5	(18)
12. Ability to run in a relaxed manner.	1	2	3	4	5	
13. Ability to move the total body effectively in almost everything I do.	1	2	3	4	5	(20)
14. Ability to do cartwheels and gymnastic stunts.	1	2	3	4	5	

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate
15. Ability to learn new movements without becoming discouraged.	1	2	3	4	5 (22)
16. Confidence in moving well in almost all situations.	1	2	3	4	5
17. Ability to maintain my balance when stationary (standing still).	1	2	3	4	5 (24)
18. Ability to move with a feeling of lightness.	1	2	3	4	5
19. Ability to throw overhand for distance.	1	2	3	4	5 (26)
20. Ability to walk with poise (self confidence).	1	2	3	4	5
21. Ability to sit down in a chair without being awkward.	1	2	3	4	5 (28)
22. Ability to balance on one leg.	1	2	3	4	5
23. Ability to move quickly around obstacles whenever necessary.	1	2	3	4	5 (30)
24. The way I move in general.	1	2	3	4	5
25. Ability to recover from an unbalanced position.	1	2	3	4	5 (32)
26. Ability to move in a direct manner when necessary.	1	2	3	4	5
27. Ability to participate in movement activities without fear of falling.	1	2	3	4	5 (34)
28. Ability to move to music.	1	2	3	4	5
29. Ability to stretch my body.	1	2	3	4	5 (36)
30. Ability to perform movements smoothly in most physical tasks I undertake.	1	2	3	4	5
31. Ability to do dance movements.	1	2	3	4	5 (38)
32. My ability to make graceful movements whenever I wish.	1	2	3	4	5
33. Ability to move better than my friends in most situations.	1	2	3	4	5 (40)
34. Ability to do as well as others on a sports team.	1	2	3	4	5
35. Ability to produce sudden movement.	1	2	3	4	5 (42)
36. Ability to perform physical skills effectively without unnecessary movements.	1	2	3	4	5
37. Carriage of my body when walking.	1	2	3	4	5 (44)
38. Ability to kick a stationary ball for distance.	1	2	3	4	5
39. Ability to express my feelings with movement.	1	2	3	4	5 (46)
40. Ability to judge distances between myself and others or myself and objects when we are moving.	1	2	3	4	5

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate
41. Ability to reduce muscular tension at will.	1	2	3	4	5 (48)
42. Ability to reproduce a rhythmical beat with bodily movements.	1	2	3	4	5
43. Grace in performing everyday movement activities.	1	2	3	4	5 (50)
44. Ability to relax at will.	1	2	3	4	5
45. Ability to stay on beat with the music when I dance.	1	2	3	4	5 (52)
46. Ability to get my arms and legs to work together when appropriate.	1	2	3	4	5
47. Ability to control slow movement whenever necessary.	1	2	3	4	5 (54)
48. Ability to perform very vigorous physical activities.	1	2	3	4	5
49. Ability to meet the physical demands of every day living.	1	2	3	4	5 (56)
50. My skill in swimming.	1	2	3	4	5

☐ ☐☐☐5 (1-6)

PART IV: FEELINGS ABOUT BODY QUESTIONNAIRE

Directions: On the following pages are listed a number of parts of your body. You are asked to indicate which parts you are satisfied with exactly as they are, which things you worry about and would like to change if it were possible, and which things you have no feelings about one way or the other.

Consider each item listed below and circle the number which best represents your feelings according the following scale:

1. Have strong negative feelings against and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate or lucky.

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate
Example: Fingernails	1	[✓ 2]	3	4	5
1. Hair	1	2	3	4	5 (8)
2. Facial complexion	1	2	3	4	5
3. Appetite	1	2	3	4	5 (10)
4. Hands	1	2	3	4	5
5. Nose	1	2	3	4	5 (12)
6. Fingers	1	2	3	4	5
7. Wrists	1	2	3	4	5 (14)
8. Breathing	1	2	3	4	5
9. Waist	1	2	3	4	5 (16)

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate
10. Energy level	1	2	3	4	5
11. Back	1	2	3	4	5 (18)
12. Ears	1	2	3	4	5
13. Chin	1	2	3	4	5 (20)
14. Exercise	1	2	3	4	5
15. Ankles	1	2	3	4	5 (22)
16. Neck	1	2	3	4	5
17. Shape of head	1	2	3	4	5 (24)
18. Body build	1	2	3	4	5
19. Profile (side view of face)	1	2	3	4	5 (26)
20. Height	1	2	3	4	5
21. Age	1	2	3	4	5 (30)
22. Width of shoulders	1	2	3	4	5
23. Arms	1	2	3	4	5 (32)
24. Chest	1	2	3	4	5
25. Eyes	1	2	3	4	5 (34)
26. Digestion	1	2	3	4	5
27. Hips	1	2	3	4	5 (36)
28. Skin texture (smoothness)	1	2	3	4	5
29. Lips	1	2	3	4	5 (38)
30. Legs	1	2	3	4	5
31. Teeth	1	2	3	4	5 (40)
32. Forehead	1	2	3	4	5
33. Feet	1	2	3	4	5 (42)
34. Sleep	1	2	3	4	5
35. Voice	1	2	3	4	5 (44)
36. Health	1	2	3	4	5
37. Knees	1	2	3	4	5 (46)
38. Posture	1	2	3	4	5
39. Face	1	2	3	4	5 (48)
40. Weight	1	2	3	4	5
41. Sex (whether you are male or female)	1	2	3	4	5 (49)
42. Back view of head	1	2	3	4	5
43. Trunk (part of body without arms, legs and head)	1	2	3	[✓ 4]	5 (50)

THE UNIVERSITY OF ALBERTA

SURVEY OF STUDENT INTERESTS

TESTING SESSION II

☐ ☐☐☐6 (1-6)

PART V: PHYSICAL EDUCATION QUESTIONNAIRE

Directions: Below you will find several items pertaining to your physical education class. You are asked to indicate which items you are satisfied with exactly as they are, which items you would like to change if it were possible, and which items you have no feelings about one way or the other.

Consider each item listed below and circle the number which best represents your feelings according to the following scale:

1. Have strong negative feelings against and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate or lucky.

	Strong Negative Feelings	Don't like - can put up with	No Feelings	Am Satisfied	Consider Myself Fortunate	
Example: Showers	1	2	3	[✓ 4]	5	
1. Physical education teacher	1	2	3	4	5	
2. Variety of activities taught	1	2	3	4	5	(8)
3. Equipment available (balls, sticks, rackets, etc.)	1	2	3	4	5	
4. Uniform required for class	1	2	3	4	5	(10)
5. Changing facilities (locker room)	1	2	3	4	5	
6. Facilities available (gym space, fields etc.)	1	2	3	4	5	(12)
7. Method of grading	1	2	3	4	5	
8. Teaching methods	1	2	3	4	5	(14)
9. Opportunity to develop skill in activities	1	2	3	4	5	
10. Size of class (number of students in class)	1	2	3	4	5	(16)
11. Feelings after leaving physical education class	1	2	3	4	5	
12. Opportunity to actually play the sports learned	1	2	3	4	5	(18)
13. Amount of effort required in class	1	2	3	4	5	
14. My skill in comparison with others in my class	1	2	3	4	5	(20)
15. Dressing and undressing for class	1	2	3	4	5	
16. Amount of competition in class	1	2	3	4	5	(22)
17. Amount of enjoyment, fun	1	2	3	4	5	
18. Carryover value of activities - use later in life	1	2	3	4	5	(24)
19. Amount of individual attention by teacher	1	2	3	4	5	

20. What do you feel is the most important reason for having physical education?

____

____

21. What do you like MOST about physical education?

____

____

22. What do you like LEAST about physical education?

____

____

23. How satisfied do you feel overall with your physical education class? Circle one number.

Very Unsatisfied	Unsatisfied	No Feeling One way or the other	Satisfied	Very Satisfied	
1	2	3	4	5	(27)

24. How satisfied do you feel overall with your body? Circle one number.

Very Unsatisfied	Unsatisfied	No Feeling One way or the other	Satisfied	Very Satisfied	
1	2	3	4	5	(28)

PART VI: PHYSICAL ACTIVITY QUESTIONNAIRE

Directions: On the following pages are several boxes which contain different ideas. Down below the boxes are eight pairs of words. Mark these word pairs to show how you feel about the ideas.

☐ ☐☐☐7 (1-6)

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY AS A SOCIAL EXPERIENCE

Physical activities which give you a chance to meet new people and be with your friends.

Always Think About the Idea in the Box.

1. good 1 : 2 : 3 : 4 : 5 : 6 : 7 bad (8)
2. of no use 1 : 2 : 3 : 4 : 5 : 6 : 7 useful
3. not pleasant 1 : 2 : 3 : 4 : 5 : 6 : 7 pleasant (10)
4. bitter 1 : 2 : 3 : 4 : 5 : 6 : 7 sweet
5. nice 1 : 2 : 3 : 4 : 5 : 6 : 7 awful (12)
6. happy 1 : 2 : 3 : 4 : 5 : 6 : 7 sad
7. dirty 1 : 2 : 3 : 4 : 5 : 6 : 7 clean (14)
8. steady 1 : 2 : 3 : 4 : 5 : 6 : 7 nervous

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY FOR HEALTH AND FITNESS

Taking part in physical activities to make your health better and to get your body in better condition.

Always Think About the Idea in the Box

1. good 1 : 2 : 3 : 4 : 5 : 6 : 7 bad (16)
2. of no use 1 : 2 : 3 : 4 : 5 : 6 : 7 useful
3. not pleasant 1 : 2 : 3 : 4 : 5 : 6 : 7 pleasant (18)
4. bitter 1 : 2 : 3 : 4 : 5 : 6 : 7 sweet
5. nice 1 : 2 : 3 : 4 : 5 : 6 : 7 awful (20)
6. happy 1 : 2 : 3 : 4 : 5 : 6 : 7 sad
7. dirty 1 : 2 : 3 : 4 : 5 : 6 : 7 clean (22)
8. steady 1 : 2 : 3 : 4 : 5 : 6 : 7 nervous

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY AS A THRILL BUT INVOLVING SOME RISK

Physical activities that are dangerous. They also can be exciting because you move very fast and must change directions quickly.

Always Think About the Idea in the Box.

1. good ___:___:___:___:___:___:___ bad (24)
   1 2 3 4 5 6 7
2. of no use ___:___:___:___:___:___:___ useful
   1 2 3 4 5 6 7
3. not pleasant ___:___:___:___:___:___:___ pleasant (26)
   1 2 3 4 5 6 7
4. bitter ___:___:___:___:___:___:___ sweet
   1 2 3 4 5 6 7
5. nice ___:___:___:___:___:___:___ awful (28)
   1 2 3 4 5 6 7
6. happy ___:___:___:___:___:___:___ sad
   1 2 3 4 5 6 7
7. dirty ___:___:___:___:___:___:___ clean (30)
   1 2 3 4 5 6 7
8. steady ___:___:___:___:___:___:___ nervous
   1 2 3 4 5 6 7

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY AS THE BEAUTY IN HUMAN MOVEMENT

Physical activities which have beautiful movements. Examples are ballet - dancing, gymnastics, tumbling and figure skating on ice.

Always Think About the Idea in the Box.

1. good ___:___:___:___:___:___:___ bad (32)
   1 2 3 4 5 6 7
2. of no use ___:___:___:___:___:___:___ useful
   1 2 3 4 5 6 7
3. not pleasant ___:___:___:___:___:___:___ pleasant (34)
   1 2 3 4 5 6 7
4. bitter ___:___:___:___:___:___:___ sweet
   1 2 3 4 5 6 7
5. nice ___:___:___:___:___:___:___ awful (36)
   1 2 3 4 5 6 7
6. happy ___:___:___:___:___:___:___ sad
   1 2 3 4 5 6 7
7. dirty ___:___:___:___:___:___:___ clean (38)
   1 2 3 4 5 6 7
8. steady ___:___:___:___:___:___:___ nervous
   1 2 3 4 5 6 7

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY FOR THE RELEASE OF TENSION

Taking part in physical activities to get away from problems you might have. You can also get away from problems by watching other people in physical activities.

Always Think About the Idea in the Box.

1. good _____:_____:_____:_____:_____:_____:_____ bad (40)
1 2 3 4 5 6 7

2. of no use _____:_____:_____:_____:_____:_____:_____ useful
1 2 3 4 5 6 7

3. not pleasant _____:_____:_____:_____:_____:_____:_____ pleasant (42)
1 2 3 4 5 6 7

4. bitter _____:_____:_____:_____:_____:_____:_____ sweet
1 2 3 4 5 6 7

5. nice _____:_____:_____:_____:_____:_____:_____ awful (44)
1 2 3 4 5 6 7

6. happy _____:_____:_____:_____:_____:_____:_____ sad
1 2 3 4 5 6 7

7. dirty _____:_____:_____:_____:_____:_____:_____ clean (46)
1 2 3 4 5 6 7

8. steady _____:_____:_____:_____:_____:_____:_____ nervous
1 2 3 4 5 6 7

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY AS LONG AND HARD TRAINING

Physical activities that have long and hard practices. To spend time in practice you need to give up other things you like to do.

Always Think About the Idea in the Box.

1. good _____:_____:_____:_____:_____:_____:_____ bad (48)
1 2 3 4 5 6 7

2. of no use _____:_____:_____:_____:_____:_____:_____ useful
1 2 3 4 5 6 7

3. not pleasant _____:_____:_____:_____:_____:_____:_____ pleasant (50)
1 2 3 4 5 6 7

4. bitter _____:_____:_____:_____:_____:_____:_____ sweet
1 2 3 4 5 6 7

5. nice _____:_____:_____:_____:_____:_____:_____ awful (52)
1 2 3 4 5 6 7

6. happy _____:_____:_____:_____:_____:_____:_____ sad
1 2 3 4 5 6 7

7. dirty _____:_____:_____:_____:_____:_____:_____ clean (54)
1 2 3 4 5 6 7

8. steady _____:_____:_____:_____:_____:_____:_____ nervous
1 2 3 4 5 6 7

What Does the Idea in the Box Mean to You?

PHYSICAL ACTIVITY FOR COMPETITION

Taking part in physical activities to compete against others - to do one's best and to try to win.

Always Think About the Idea in the Box.

1. good ___:___:___:___:___:___:___ bad (56)
   1 2 3 4 5 6 7
2. of no use ___:___:___:___:___:___:___ useful
   1 2 3 4 5 6 7
3. not pleasant ___:___:___:___:___:___:___ pleasant (58)
   1 2 3 4 5 6 7
4. bitter ___:___:___:___:___:___:___ sweet
   1 2 3 4 5 6 7
5. nice ___:___:___:___:___:___:___ awful (60)
   1 2 3 4 5 6 7
6. happy ___:___:___:___:___:___:___ sad
   1 2 3 4 5 6 7
7. dirty ___:___:___:___:___:___:___ clean (62)
   1 2 3 4 5 6 7
8. steady ___:___:___:___:___:___:___ nervous
   1 2 3 4 5 6 7

What Does the Idea in the Box Mean to You?

A FEMALE ATHLETE

A girl or woman who participates or competes in vigorous physical activities and sports.

Always Think About the Idea in the Box.

1. good ___:___:___:___:___:___:___ bad (64)
   1 2 3 4 5 6 7
2. of no use ___:___:___:___:___:___:___ useful
   1 2 3 4 5 6 7
3. not pleasant ___:___:___:___:___:___:___ pleasant (66)
   1 2 3 4 5 6 7
4. bitter ___:___:___:___:___:___:___ sweet
   1 2 3 4 5 6 7
5. nice ___:___:___:___:___:___:___ awful (68)
   1 2 3 4 5 6 7
6. happy ___:___:___:___:___:___:___ sad
   1 2 3 4 5 6 7
7. dirty ___:___:___:___:___:___:___ clean (70)
   1 2 3 4 5 6 7
8. steady ___:___:___:___:___:___:___ nervous
   1 2 3 4 5 6 7

PART VII: PHYSICAL ACTIVITY INFORMATION

☐ ☐☐☐8 (1-6)

Directions: In this section we would like to obtain some information about your involvement in physical activity and sports, along with that of your family and friends. Answer each question either by putting an X in the appropriate box or by filling in the blanks.

1. For this school year since September, indicate how many of each of the following activities you participated in by checking the appropriate box:

	None	One	Two	Three	Four or More	
A. Interschool teams - teams from your school which compete against other schools in sports. Name the teams you were on: ______________________	☐	☐	☐	☐	☐	(8)
B. Intramural activities - physical activities within your school, for students from your school only.	☐	☐	☐	☐	☐	
C. Organized activities outside the school - physical activities outside the school in which you compete against others in tournaments and meets or activities in which you took lessons. Name the activities: ______________________	☐	☐	☐	☐	☐	(10)
D. Recreational activities outside the school - physical activities outside the school in which you do not compete but in which you participate just for fun.	☐	☐	☐	☐	☐	

2. List ALL the physical activities that you do OUTSIDE of physical education class for each season of the year. Estimate how many hours each day you would participate in some form of physical activity for each season of last year.

	Activities	Hours/Day	
Spring and Fall	______________________	__________	(12)
	______________________		
	______________________		
Summer Holidays	______________________	__________	
	______________________		
	______________________		
Winter	______________________	__________	(14)
	______________________		

3. What are your four favourite physical activities? Print them in the spaces provided. Indicate how often you do each of these activities by circling the number which best represents your participation according to the following scale:
   1. Every day without fail in season
   2. At least two or three times a week
   3. Once a week or every weekend
   4. At least once or twice a month
   5. Less than once a month

1. ______________________	1	2	3	4	5	
2. ______________________	1	2	3	4	5	(16)
3. ______________________	1	2	3	4	5	
4. ______________________	1	2	3	4	5	(18)

4. a. Why is the activity you put in line 1 of question 3 your favourite physical activity? ______________________________

____

b. Why do you participate in any form of physical activity?

____

____

c. Do you wish you participated in more physical activity?

Yes No (19)

d. If so, why do you not participate more? ______________________________

____

e. Do you participate in as much physical activity as you did last year?

Yes No (20)

f. If not, why do you not participate in as much? ______________________________

____

g. What do you like most about physical activity? ______________________________

____

h. What do you like least about physical activity? ______________________________

____

5. For this school year, since September, indicate how often you did each of the following, by checking the appropriate box:

	Never	Once or Twice Per Year	Once or Twice Per Sport Season	Once or Twice Per Month	At least Once or Twice per Week	
a. Attend a live sports event (eg. high school games, community league, Edmonton Oilers/Eskimos)	☐	☐	☐	☐	☐	
b. Watched sport on television	☐	☐	☐	☐	☐	(22)
c. Listened to sport on the radio	☐	☐	☐	☐	☐	
d. Read about sport in newspapers or magazines	☐	☐	☐	☐	☐	(24)

6. For the last year (12 months), indicate how frequently each of the following participated in some form of physical activity by checking the appropriate box:

	Don't Know or Not Applicable	Never	Once or Twice Per Year	Once or Twice Per Sport Season	Once or Twice Per Month	At least Once or Twice per Week	
a. Father	☐	☐	☐	☐	☐	☐	(26)
b. Mother	☐	☐	☐	☐	☐	☐	
c. Older brother(s) (if any)	☐	☐	☐	☐	☐	☐	(28)
d. Older sister(s) (if any)	☐	☐	☐	☐	☐	☐	
e. Younger brother(s) (if any)	☐	☐	☐	☐	☐	☐	(30)
f. Younger sister(s) (if any)	☐	☐	☐	☐	☐	☐	
g. Your best girl friends	☐	☐	☐	☐	☐	☐	(32)
h. Your boy friend	☐	☐	☐	☐	☐	☐	
i. Favourite Teacher/Coach	☐	☐	☐	☐	☐	☐	(34)

7. For the last year (12 months), indicate how frequently your parents participated with you in physical activity by checking the appropriate box:

a. Father	☐	☐	☐	☐	☐	☐	
b. Mother	☐	☐	☐	☐	☐	☐	(36)

8. For the last year (12 months), indicate how frequently your parents watched you participate in physical activity by checking the appropriate box:

a. Father	☐	☐	☐	☐	☐	☐	
b. Mother	☐	☐	☐	☐	☐	☐	(38)

9. For the last year (12 months), indicate how much each of the following encouraged you to participate in physical activity by checking the appropriate box:

	Not Applicable	Don't Know	Not at All	Very Little	Some-what	A Great Deal	
a. Father	☐	☐	☐	☐	☐	☐	
b. Mother	☐	☐	☐	☐	☐	☐	(40)
c. Older brother(s) (if any)	☐	☐	☐	☐	☐	☐	
d. Older sister(s) (if any)	☐	☐	☐	☐	☐	☐	(42)
e. Younger brother(s) (if any)	☐	☐	☐	☐	☐	☐	
f. Younger sister(s) (if any)	☐	☐	☐	☐	☐	☐	(44)
g. Your best girl friends	☐	☐	☐	☐	☐	☐	
h. Your boy friend	☐	☐	☐	☐	☐	☐	(46)
i. Favourite teacher/coach	☐	☐	☐	☐	☐	☐	

10. Indicate how much your parents wish you to be good in physical activities by checking the appropriate box:

a. Father	☐	☐	☐	☐	☐	☐	(48)
b. Mother	☐	☐	☐	☐	☐	☐	

11. Do you have a sports hero? Yes No (50)

Who is it? ____________________

Who is your favourite female sports participant? ____________________ (52)

12. What sports equipment do you own? (eg. softball glove, skates) ____________________

____ (53)

PART VIII: PERSONAL INFORMATION

Directions: This is the last section of the questionnaire. We would like to obtain some general information about yourself. Answer each question by either putting an X in the appropriate box or by filling in the blanks.

1. What grade are you presently in?

   1. Grade 6 ☐ 4. Grade 9 ☐ (55)
   2. Grade 7 ☐ 5. Grade 10 ☐
   3. Grade 8 ☐

2. What age are you?

   1. 11 or younger ☐ 4. 14 ☐ 8. 18 ☐
   5. 15 ☐ 9. 19 ☐ (56)
   2. 12 ☐ 6. 16 ☐ 10. 20 or over ☐
   3. 13 ☐ 7. 17 ☐

3. We would like to know at what level of maturity you are. What age did you begin having your period (menstruating)?

   1. Have not begun yet ☐ 5. 13 ☐
   2. 10 or under ☐ 6. 14 ☐ (57)
   3. 11 ☐ 7. 15 ☐
   4. 12 ☐ 8. 16 or over ☐

4. How much education have your parents had? Put the appropriate number in the box for both your mother and father.

   1. Less than 7 years of school completed
   2. Junior high school (completed grade VII, VIII or IX)
   3. Some high school (completed grade X or XI)
   4. High school graduate
   5. Some university training (1 year or more)
   6. University degree
   7. Vocational or technical training
   8. Graduate or professional training after university degree
   9. Don't know

   Father ☐ (58)

   Mother ☐

5. a. What does your father do? What is his job? ____________________

   b. Briefly describe what he does at this job. ____________________

   ____

6. a. What does your mother do? What is her job? ____________________

   b. Briefly describe what she does at this job. ____________________

   ____

7. What is your religious preference?

   Catholic ☐ Other ☐ (60)

   Protestant ☐ None ☐

8. How many brothers do you have?

1. none ☐ 3. 2 ☐ 5. 4 ☐ (61)
2. only 1 ☐ 4. 3 ☐ 6. 5 or more ☐

9. How many of your brothers are older than you are?

1. none ☐ 3. 2 ☐ 5. 4 ☐ (62)
2. only 1 ☐ 4. 3 ☐ 6. 5 or more ☐

10. How many sisters do you have?

1. none ☐ 3. 2 ☐ 5. 4 ☐ (63)
2. only 1 ☐ 4. 3 ☐ 6. 5 or more ☐

11. How many of your sisters are older than you are?

1. none ☐ 3. 2 ☐ 5. 4 ☐ (64)
2. only 1 ☐ 4. 3 ☐ 6. 5 or more ☐

(65)

12. How tall are you? _____feet _____inches

13. How much do you weigh? _____ pounds (66)

THANK YOU VERY MUCH FOR YOUR COOPERATION

CHANGES TO QUESTIONNAIRE--YEAR 2

- 9 -

2. What age are you?

1. 11 or younger ☐
2. 12 ☐
3. 13 ☐
4. 14 ☐
5. 15 ☐
6. 16 ☐
7. 17 ☐
8. 18 ☐
9. 19 ☐ (46)
10. 20 or over ☐

3. We would like to know at what level of maturity you are. What age did you begin having your period (menstruating)?

1. Have not begun yet ☐
2. 10 or under ☐
3. 11 ☐
4. 12 ☐
5. 13 ☐
6. 14 ☐
7. 15 ☐ (47)
8. 16 or over ☐

4. Were you born in Canada?

Yes No (48)

5. If you were not:

a. Where were you born? ______________________________ (49)

b. At what age did you move to Canada? ______________________ (51)

6. Have you ever used a language other than English in your home?

Yes No (53)

7. If so, what is it? ______________________________________ (54)

8. How many brothers do you have?

1. none ☐
2. only 1 ☐
3. 2 ☐
4. 3 ☐
5. 4 ☐ (56)
6. 5 or more ☐

9. How many of your brothers are older than you are?

1. none ☐
2. only 1 ☐
3. 2 ☐
4. 3 ☐
5. 4 ☐
6. 5 or more ☐

10. How many sisters do you have?

1. none ☐
2. only 1 ☐
3. 2 ☐
4. 3 ☐
5. 4 ☐ (58)
6. 5 or more ☐

11. How many of your sisters are older than you are?

1. none ☐
2. only 1 ☐
3. 2 ☐
4. 3 ☐
5. 4 ☐
6. 5 or more ☐

12. How tall are you? ____ feet ____ inches (60)

13. How much do you weigh? ____ pounds (62)

THANK YOU VERY MUCH FOR YOUR COOPERATION

APPENDIX B

Changes in Wording to Original Instruments

Changes in Wording to Original Instruments

Instrument	Item	Changes for Pilot Study	Item	Changes for Final Version
Holland's Self Directed Search			12	Add (meetings)
			18	Add (speeches)
			36	Delete "and room"
Bem's Sex Role Inventory	1	Add (relying on oneself)		
	2	Add (giving up easily)		
	6	Add (changing moods quickly)		
	7	Add (not needing others)		
	9	Add (concerned about doing a good job)		
	11	Add (expressing feelings)		
	12	Add (dramatics)		
	13	Add (stating one's rights)		
	14	Add (easily flattered)		
	17	Add (standing by one's friends)		
	18	Add (not able to anticipate)		
	19	Add (making your ideas known)	20	Add (things that girls usually do)
	21	Add (responsible - can depend on)		
	22	Add (thinking - figuring out problems)		
	23	Add (warmhearted - concerned about others)		
	30	Add (keeping your thoughts to yourself)		
	32	Add (feels sorrow for troubles of others)	33	Add (meaning what you say)
	34	Add (able to get along without help)		

Instrument	Item	Changes for Pilot Study	Item	Changes for Final Version
	36	Add (having an exaggerated opinion of oneself)		
	37	Add (wanting to take control)		
	38	Add (speaking gently)	40	Add (things that boys do)
	42	Add (serious)		
	46	Add (pushy)		
	47	Add (believing easily)		
	48	Add (taking a long time to do something)		
	51	Add (able to adjust to new situations)		
	52	Add (leading your life in your own way)		
	54	Add (disorganized)		
	57	Add (saying the right thing)		
	58	Add (strong desire to get ahead)		
	60	Add (usual-ordinary)		
Nelson and Allen's Movement Satisfaction Scale		Instructions - change to conform with Secord and Jourard's Body Cathexis Scale		Instructions - add "or lucky" to response 5
			5	Change (on a varsity level" to "at an interschool level"
			9	Add (without feeling self-conscious)
			17	Add (standing still)
			19	Change "overarm" to "overhand"
			20	Add (self confidence)

Instrument	Item	Changes for Pilot Study	Item	Changes for Final Version
Secord and Jourard's Body Cathexis Scale		Instructions - change response 1 to "have strong negative feelings against Delete items 8 "elimination" and 39 "sex activities" of original instrument		Instructions - add "or lucky" to response 5 Delete item 5 "distribution of hair over body" of original instrument
	20	Add (side view of face)	43	Add (part of body without arms, legs or head)
	29	Add (smoothness)		
	41	Add (whether you are male or female)		
Children's Attitude Toward Physical Avtivity Scale				Instruction - add "or lucky" to response 5

APPENDIX C

The Pilot Study

A pilot study was carried out in the Edmonton Catholic School District a month and a half before the final study was begun.

Objectives

The pilot study was undertaken with six objectives in mind:

1. To determine if the items were appropriate for Grade 6 to 10 girls. The instructions, format of the instruments, and the actual wording of the items were pretested to see if they could be comprehended and answered by 11 to 17 year old subjects. The pilot subjects were encouraged to ask questions about the items and to indicate, either verbally or in writing, the items they did not understand or did not care to answer. All these queries were noted and some changes made accordingly.

2. To determine the length of time required for this age group to answer the 20-page questionnaire.

3. To practice the testing procedures and to standardize them for the final study.

4. To become familiar with the school district, with procedures and practices in the schools, and with the subjects ages 11 to 17.

5. To check the coding of the questionnaire for keypunching.

6. To obtain data for a reliability analysis. The instruments were analyzed for internal consistency, and for

test-retest reliability with a two-week time interval between testing sessions.

The Sample

An attempt was made to make the sample for the pilot study as similar as possible to the sample used in the final study. Therefore, one school was picked from each of the five types of schools in the Edmonton Catholic School District (elementary, elementary-junior, junior, junior-senior, senior) to obtain a cross-section of schools and grades. The five schools were randomly picked using a random number table.

The elementary school picked had only eight girls in Grade 6 and therefore, all eight girls completed the testing. The senior high school would not allow a random selection of all Grade 10 students because of disruption of too many classes, but did consent to the testing of a Grade 10 physical education class. These two problems in sampling (small numbers in Grade 6 schools sampled and non-random sampling in senior high schools) were also encountered in the final study. For the other three types of schools the subjects were selected randomly using a random number table. The numbers of students chosen in each grade for each school were calculated to make the total sample for each grade close to 25 or above.

Originally it was planned to give the entire questionnaire to each school during two testing sessions and then administer both sessions again in two weeks time to obtain test-retest reliability data for all subjects. However, after administering the two sessions once, it was felt that the students would not maintain their interest and motivation for two more testing sessions. Therefore, it was decided to retest each school on only half of the questionnaire. Schools 1, 3, and 4 were resurveyed on session I of the questionnaire and schools 2 and 5 were resurveyed on session II. Table 50 outlin~~es the~~ number of students retested on each session of the questionnaire.

One hundred and forty-one subjects were in the sample initially and completed one or more of the testing sessions. One hundred and twenty-six or 89.4 percent of the subjects were present for all three testing sessions. By coincidence, test-retest reliability data was obtained from 63 subjects on both session I and session II of the questionnaire.

Collection of Data

The data for the pilot study were collected in a manner very similar to the final study. These procedures are outlined in pages 75 to 79.

Changes to Questionnaire

After the pilot study, a few changes were made in the questionnaire to make it easier to answer or to include items that were felt to be needed. The following changes were made in the pilot study questionnaire for use in the final study:

Table 50

Pilot Study Sample Completing Retest

School	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total	% of Sample Completing
Session I							
1. St. Joan	8					8	100%
3. Sir John Thompson		9	9	10		28	93.3%
4. St. Mary's		6	9	4	8	27	84.4%
Total Session I	8	15	18	14	8	63	
Session II							
2. St. Francis of Assis	18	10	6	11		45	93.8%
5. Archbishop O'Leary					18	18	78.3%
Total Session II	18	10	6	11	18	63	
Total of Pilot Study Sample	26	25	24	25	26	126	
% of Sample Completing	96.3%	96.2%	82.8%	96.2%	78.8%	89.4%	

1. Bem's Sex Role Inventory was changed from a seven-point scale to a five-point scale and the subjects were required to circle their response rather than put their response in a box.

2. The order of Secord and Jourard's Body Cathexis Scale and Nelson and Allen's Scale for the Appraisal of Movement Satisfaction was reversed so the students would be fresher when answering the movement satisfaction scale.

3. Part VII: Physical Activity Information

   a. Question 1: Subjects were asked to count activities "for the school year since September" instead of "the last year (12 months)".

   b. Question 2: "Competitive" activities were changed to "organized activities outside the school" to include lessons in activities.

   c. Question 2: The spring and fall seasons were combined into one category because the students participated in similar activities.

   d. Question 2: "Hours per week" were changed to "hours per day spent in physical activity on an average school day in the spring and fall".

   e. Question 3: "The four activities in which you participate most frequently" was changed to "your four favourite activities".

4. Questions on significant others:

a. The questions on significant others' secondary participation were deleted.

b. The list of significant others was changed slightly to include "your best girl friends", "your boy friend", and "favourite teacher/coach".

c. A "not applicable" column was added to question 8, significant others' encouragement for physical activity.

5. The age of menarche question was reworded to explain why it was being asked.

6. The format of the parents' education question was changed.

7. Additions:

a. Items on perception of being a tomboy when younger and activity preference were attached to the end of Rosenberg's Self Esteem Scale using the same scale.

b. Two additional open-ended questions were included after the Satisfaction with Physical Education Scale to determine what the subjects liked most and least about physical education.

c. A question on overall satisfaction with the body.

d. Several open-ended questions on physical activity participation.

e. A religious preference question.

8. The questionnaire was divided into two separate handouts, one for each testing session with the pages being renumbered from 1 for the second session.

APPENDIX D

Reliability Measures

Table 51

Factor Analysis[a] of Holland's Self-Directed Search

Item No. and Name	Factor Loading	Item No. and Name	Factor Loading
Factor 1 - Realistic Dimension (18.9%)		Factor 2 - Investigative Dimension (15.7%)	
31. Take auto mechanics course	.80	58. Take chemistry course	.75
7. Fix mechanical things	.76	46. Work with chemistry set	.74
4. Repair cars	.73	37. Work in a laboratory	.64
1. Fix electrical things	.63	40. Work on a scientific project	.42
19. Work on a hot rod or motorcycle	.58	64. Take biology course	.34
16. Use metal working on tools	.57	61. Take geometry course	.30
43. Build rocket models (I)	.43	43. Build rocket models	.26
45. Operate business machines (C)	.42	34. Read scientific books	.22
13. Drive a truck or tractor	.35	55. Take physics course	.21
22. Take shop course	.33		
25. Take mechanical drawing course	.30		
28. Take woodworking course	.27		
Factor 3 - Conventional Dimension (10.4%)		Factor 4 - Public Occasions (7.7%)	
57. Take bookkeeping course	.67	12. Attend conferences (meetings) (E)	.81
42. Add numbers in business or bookkeeping	.62	59. Attend meetings and conferences (S)	.78
54. Take business course	.50	18. Give talks (E)	.25
63. File letters, reports, records	.48	38. Attend religious services (S)	.20
45. Operate business machines	.35		
48. Keep detailed records of expenses	.34		
66. Write business letters	.34		
60. Take commercial math course	.26		
51. Take typewriting course	.21		

Table 51 (continued)

Item No. and Name	Factor Loading	Item No. and Name	Factor Loading
Factor 5 - Social Dimension (6.1%)		Factor 6 - Reading (4.3%)	
50. Go to parties	.57	20. Read popular fiction (A)	.54
53. Dance	.50	49. Read about special subjects on my own (I)	.46
27. Meet important people (E)	.40	56. Read psychology books (S)	.42
65. Make new friends	.34	64. Take biology course (I)	.35
35. Write letters to friends	.26	34. Read scientific books (I)	.25
47. Take care of children	.23	41. Belong to social clubs (S)	.25
62. Go to sports events	.23	29. Read or write poetry (A)	.24
44. Help others with personal problems	.21		

[a] Twenty-one factors accounted for 59.6% of all variables' variance

[I] Investigative Dimension

[C] Conventional Dimension

[E] Enterprising Dimension

[S] Social Dimension

[A] Artistic Dimension

Table 52

Factor Analysis[a] of Bem's Sex Role Inventory

Item No. and Name	Factor Loading	Item No. and Name	Factor Loading
Factor 1 - Feminine Dimension (33.7%)		Factor 2 - Masculine Dimension (13.7%)	
32. Compassionate	.66	49. Acts as a leader	.78
23. Sympathetic	.63	25. Has leadership abilities	.60
35. Eager to soothe hurt feelings	.57	37. Dominant	.59
26. Sensitive to the needs of others	.56	46. Aggressive	.37
29. Understanding	.52	43. Willing to take a stand	.36
41. Warm	.49	58. Ambitious	.34
44. Tender	.47	52. Individualistic	.28
11. Affectionate	.42	55. Competitive	.26
17. Loyal	.42	19. Forceful	.25
59. Gentle	.40	13. Assertive	.22
33. Sincere (S)	.40		
3. Helpful (S)	.36		
21. Reliable (S)	.32		
Factor 3 - Athletic Qualities (7.1%)		Factor 4 - Negative Qualities (6.3%)	
10. Athletic (M)	.62	47. Gullible (F)	.52
55. Competitive (M)	.62	36. Yielding (F)	.32
58. (2) Ambitious (M)	.19	46. Aggressive (M)	.30
		50. Childlike (F)	.26
		14. Flatterable (F)	.26
		48. Inefficient (S)	-.21

[a] Eighteen factors accounted for 57.0% of all variables variance

[S] Social desirability

[F] Feminine dimension

[M] Masculine dimension

Table 53

Guttman Analysis of Rosenberg's Self Esteem Scale

```
* * * * * * * * * *   G U T T M A N   S C A L E   ( G U T E S T A   )   U S I N G
SCALE1                                               DIVISION POINT =      1.00
SCALE2                                               DIVISION POINT =      1.00
SCALE3                                               DIVISION POINT =      1.00
SCALE4                                               DIVISION POINT =      1.00
SCALE5                                               DIVISION POINT =      1.00
SCALE6                                               DIVISION POINT =      1.00
* * * * * * * * * * * * *   RESP = 1 FOR VALUES EQUAL TO DIVISION POINT AND ABOVE   * *

ITEM.. SCALE1    SCALE4    SCALE3    SCALE2    SCALE5    SCALE6

RESP..    0    1 I  0    1 I  0    1 I  0    1 I  0    1 I  0    1 I TOTAL
------I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I-ERR-----I
G     I         I         I         I         I         I         I
U   6 I   0    7I   0    7I   0    7I   0    7I   0    7I   0    7I     7
T     I------ERRI         I         I         I         I         I
E     I         I         I         I         I         I         I
S   5 I  14   14I   7   21I   5   23I   2   26I   0   28I   0   23I    28
T     I         I------ERRI         I         I         I         I
M     I         I         I         I         I         I         I
    4 I  43   17I  31   29I  22   38I  16   44I   7   53I   1   59I    60
      I         I         I------ERRI         I         I         I
      I         I         I         I         I         I         I
    3 I 109    5I  91   23I  79   35I  46   68I  12  102I   5  109I   114
      I         I         I         I------ERRI         I         I
      I         I         I         I         I         I         I
    2 I 192    4I 186   10I 175   21I 152   44I  58  138I  21  175I   196
      I         I         I         I         I------ERRI         I
      I         I         I         I         I         I         I
    1 I 159    1I 156    4I 159    1I 155    5I 129   31I  42  118I   160
      I         I         I         I         I         I------ERRI
      I         I         I         I         I         I         I
    0 I  38    0I  38    0I  38    0I  38    0I  38    0I  38    0I    38
      I---------I---------I---------I---------I---------I---------I
SUMS    555   48  509   94  478  125  409  194  244  359  107  496     603
PCTS     92    8   84   16   79   21   68   32   40   60   18   32
ERRORS    0   41    7   66   27   57   64   49   77   31   69    0     488

   661 CASES WERE PROCESSED
    58 (OR  8.8 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8651
MINIMUM MARGINAL REPRODUCIBILITY = 0.7756
PERCENT IMPROVEMENT = 0.0896
COEFFICIENT OF SCALABILITY = 0.3990
```

Table 54

Factor Analysis[a] of Movement Satisfaction Scale

Item No. and Name	Factor Loading
Factor 1 - Sports Skills (61.8%)	
34. Ability to do as well as others on a sports team	.73
7. Ability to run with speed	.68
5. Ability to participate in sport activity at an interschool level	.63
1. Pride in physical ability	.61
6. Ability to jump for height	.58
48. Ability to perform very vigorous physical activities	.58
3. Ability to learn physical skills easily	.54
12. Ability to run in a relaxed manner	.52
14. Ability to do cartwheels and gymnastics stunts	.47
19. Ability to throw overhand for distance	.47
36. Ability to perform physical skills effectively without unnecessary movements	.46
13. Ability to move the total body effectively in almost everything I do	.46
Factor 2 - Everyday Movement (10.7%)	
21. Ability to sit down in a chair without being awkward	.61
17. Ability to maintain my balance when stationary (standing still)	.55
8. Ability to arise from a chair without feeling awkward or clumsy	.55
22. Ability to balance on one leg	.49
24. The way I move in general	.49
10. Ability to pick up or carry things with dropping them	.49
4. Ability to maintain my balance when moving	.46
20. Ability to walk with poise (self-confidence)	.45
18. Ability to move with a feeling of lightness	.42
26. Ability to move in a direct manner when necessary	.40
37. Carriage of my body when walking	.39
9. Ability to move freely without being inhibited (feeling self-conscious)	.38
Factor 3 - Movement to Music (7.7%)	
31. Ability to do dance movements	.81
28. Ability to move to music	.77
45. Ability to stay on beat with the music when I dance	.76
32. Ability to make graceful movements whenever I wish	.38

Table 54 (continued)

Item No. and Name	Factor Loading
42. Ability to reproduce a rhythmical beat with bodily movements	.37
29. Ability to stretch my body	.32
46. Ability to get my arms and legs to work together when appropriate	.28
43. Grace in performing everyday movement activities	.26
30. Ability to perform movements smoothly in most physical tasks	.24
33. Ability to move better than my friends in most situations	.23
Factor 4 - Relaxation (3.9%)	
41. Ability to reduce muscular tension at will	.51
43. Grace in performing everyday movement activities	.42
44. Ability to relax at will	.41
9. Ability to move freely without being inhibited (feeling self-conscious)	.39
42. Ability to reproduce a rhythmical beat with bodily movements	.34
37. Carriage of my body when walking	.32
40. Ability to judge distances between myself and others - when moving	.31
10. Ability to pick up or carry things without dropping them	.27
15. Ability to learn new movements without becoming discouraged	.25
20. Ability to walk with poise (self-confidence)	.19

[a] Ten factors accounted for 53.9% of all variables' variance

Table 55

Factor Analysis[a] of Body Cathexis Scale

Item No. and Name	Factor Loading	Item No. and Name	Factor Loading
Factor 1 - Body Parts (56.8%)		Factor 2 - Body Size (10.4%)	
15. Ankles	.59	9. Waist	.75
16. Neck	.57	40. Weight	.74
23. Arms	.56	27. Hips	.60
7. Wrists	.52	18. Body build	.56
17. Shape of head	.42	3. Appetite	.50
22. Width of shoulders	.39	30. Legs	.47
12. Ears	.36	43. Trunk	.36
13. Chin	.36	22. (2) Width of shoulders	.26
8. Breathing	.35	14. Exercise	.24
11. Back	.33	39. Face	.24
37. Knees	.33	10. Energy level	.22
24. Chest	.32	38. Posture	.21
42. Back view of head	.31		
33. Feet	.31		
Factor 3 - Face (6.7%)		Factor 4 - Body Processes (5.7%)	
2. Facial complexion	.78	21. Age	.50
28. Skin texture	.48	34. Sleep	.46
39. Face	.46	35. Voice	.43
1. Hair	.36	36. Health	.37
32. Forehead	.27	8. (2) Breathing	.29
38. Posture	.24	26. Digestion	.28
		20. Height	.28
		41. Sex (whether male or female)	.27
		3. (2) Appetite	.25
		22. (3) Width of shoulders	.21

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[a] Ten factors accounted for 53.7% of all variables' variance

APPENDIX E

Physical Education Teachers' Rating Scales

THE UNIVERSITY OF ALBERTA

ADOLESCENT GIRLS' SURVEY

INFORMATION REQUESTED:

1. Teacher's rating of attitude in physical education:

Very poor	Poor	Neutral	Good	Very Good
1	2	3	4	5

2. Teacher's rating of physical ability or skills:

Well below Average	Slightly below Average	Average	Slightly above Average	Well above Average
1	2	3	4	5

NO.	NAME	PHYSICAL EDUCATION ATTITUDE	PHYSICAL ABILITY

APPENDIX F

Letters to Principals and Subjects

LETTER TO PRINCIPALS (YEAR 1)

9715-66 Avenue
Edmonton, Alberta
T6E 0M4

Dear

Your school has been randomly selected to participate in a research study on behalf of the Edmonton Separate School System. The study is designed to examine the physical activity involvement of adolescent girls and factors that are related to such involvement. It will have important implications for planning future physical education programs in your school system.

The study involves two components:

a) Grade 6 to 10 girls will be surveyed in May/June 1978, and again in May/June 1979 to determine change in physical activity involvement from Grade 6 to 10. This initial component of the study will be conducted by myself. I am a doctoral student in the Faculty of Graduate Studies and Research at the University of Alberta. The study will form the basis for my doctoral dissertation.

b) The Grade 6 sample (approximately 270 girls) will be surveyed for five years (May 1978, May 1979, May 1980, May 1981, May 1982) to obtain longitudinal data on individual girls. The longitudinal component of the study is being coordinated by Dr. Ann Hall of the Faculty of Physical Education at the University of Alberta.

Thus the same Grade 6 students will be tested for five consecutive years and the Grades 7,8,9 and 10 students for two consecutive years beginning in May 1978. Your cooperation is requested to obtain a random sample of the grades involved in your school, to assign times for the girls to complete the questionnaires, and to provide rooms for the testing. Specific details for your school are outlined on the attached sheet. I will contact you by telephone to arrange the testing dates.

The questionnaire has been pilot tested and has been found to take two 75 minute sessions for Grade 6, two one-hour sessions for Grades 7,8 and 9 and two 40 minute sessions for Grade 10. Except for the use of elementary schools where all the Grade 6 girls will be tested, I would like to randomly select the students for the study in order to obtain meaningful results. This could be done from class lists prior to the first testing session.

So as not to bias the results of the survey, the fact that it is a survey about physical activity involvement should not be stressed. The students should merely be told that it is a survey of student interests. The results of the study will be made available to your school system upon completion of the survey.

If you have any questions regarding the study please do not hesitate to contact me at 436-6396.

Sincerely,

Janice Butcher

Janice Butcher

JB:mw

LETTER TO PRINCIPALS (YEAR 2)

Janice Butcher
9715 - 66 Avenue
Edmonton, Alberta
T6E 0M4
April 3, 1979

Dear

Last May, your school was involved in a research project on physical activity participation of adolescent girls. I surveyed 661 girls in Grades 6 to 12 of the Edmonton Catholic School District, as part of my doctoral dissertation. The second half of the study is scheduled for May, 1979 to determine how the girls' participation and interests differ from last year.

I appreciated your school's cooperation with the study last year and am requesting your help for the retest. Basically the same questionnaire will be administered again with a few deletions. Therefore, two testing sessions of about one hour each will be necessary two different days sometime between May 1 and May 31. I will be telephoning you in the near future to make an appointment. I would like to visit your school to determine which of last year's subjects are still enrolled in your school and to arrange the testing dates.

I am enclosing a preliminary report of the results of last year's survey. It is limited to the open-ended questions of the questionnaire (which will not be repeated this year) in order to prevent contamination of this year's testing. Nevertheless, it should prove interesting and useful to you and your physical education staff. As I requested last year, I would appreciate it if the physical activity element of the study is not stressed, so as not to bias the results of the survey. The students should again be told that it is a survey of student interests and how they differ with age.

If you have any questions please call me at 436-6396. I am looking forward to meeting with you again.

Sincerely,

Janice Butcher

JB/jmt
Janice Butcher

LETTER TO STUDENTS (YEAR 2)

9715 - 66 Avenue
Edmonton, Alberta
T6E OM4
May 3, 1979

Dear

Last May (1978), you were involved in a survey at School about interests and activities of girls from Grades 6 to 10. I am a graduate student in the Department of Physical Education at the University of Alberta, and the survey is my doctoral dissertation (thesis). This year I am doing a follow-up survey of the same girls that I tested last year to find out what your interests and activities are this year.

It is important that all the subjects who completed the questionnaire last year answer the questionnaire again this year so that my sample is complete. Therefore, I would like you to fill out the enclosed questionnaire and return it to me in the stamped self-addressed envelope. It looks like a long questionnaire, but it will only take about an hour and 20 minutes to complete if you work steadily at it. Read the directions thoroughly and think carefully about each question. If you have any questions please telephone me at 436-6396 during the evening. I will be glad to help you.

I hope that you will complete the questionnaire in the next week and mail it back to me. I appreciate your assistance with this research.

Sincerely,
Janice Butcher
Janice Butcher

APPENDIX G

Value Codes for Open-ended Questions

Value Codes for Physical Activities

1. Basketball
2. Volleyball
3. Track and field
4. Softball - baseball
5. Badminton
6. Field hockey
7. Gymnastics - modern gymnastics
8. Hockey
9. Soccer
10. Ringette
11. Dance (tap, jazz, square)
12. Ballet
13. Figure skating
14. Swimming (including lessons)
15. Cross country ski
16. Down hill ski (skiing)
17. Tennis
18. Bicycling
19. Skateboarding
20. Jogging - running
21. Shoot baskets
22. Play catch
23. Play frisbee
24. Lawn games (croquet, lawn darts)
25. Camping
26. Football
27. Walking - walking dog
28. Skidooing
29. Tobogganning - sleighing
30. Skating
31. Snowball fights
32. Bowling
33. Races - tag
34. Swinging
35. Waterskiing
36. Horseback riding
37. Curling
38. Tetherball
39. Hiking
40. Water and leaf fights
41. Boating
42. Canoing
43. Murderball
44. Roller skating
45. Fly kites
46. Play in parks (outside)
47. Play in snow
48. Ethnic dancing
49. Fishing - ice fishing
50. Skipping
51. Team Keewee
52. Table tennis
53. Lots of games
54. Mountain climbing
55. Recreation club - YWCA
56. Floor hockey
57. Exercise
58. Team handball
59. Fighting - wrestling
60. Surfing
61. Paddleball - raquetball
62. Competitive swimming
63. Handball
64. Gardening
65. Golf
66. Children's games
67. Climb trees
68. Hang gliding
69. Surfing
70. Parachuting
71. Snowshoeing
72. Sailing
73. Synchronized swim
74. Street hockey
75. Trampoline
76. Cross Country running
77. Dodgeball
78. Diving
79. Playing with dog
80. Yoga
81. Paddling - rowing
82. Archery
83. Riflery
84. Snooker
85. Motocross
86. Squash
87. Baton
88. Rugby
89. Lacrosse
90. Boxing
91. Car racing
92. Weight lifting
93. Judo
94. Health Spa
95. Water Polo
96. Lawn Bowling
97. Tug o' War

Value Codes for Open-Ended Questions

Health - Fitness Related

10. To be fit, get in good shape
11. To keep in good health, be healthy
12. To develop muscles, bodies, flexibility, strength
13. To prevent heart attack, good for heart
14. To get exercise
15. To control weight, prevent fatness, make me look better
16. To learn how body functions, about body parts, how to become fit
17. Makes me feel better, good
18. Get rid of stress and tension, relax
19. It's good for you

Educational Value

20. Learning about sports, learning to play sports
21. Developing skill in specific sports
22. Developing general physical skills and abilities, sharpen reflexes, etc.
23. Lots of practice, takes a long time to learn, doing it properly, time to perfect
24. Carryover value, lifetime sports, helping you in the future

Affective Value - Enjoyment

30. Having fun, I enjoy it, I like it, it's fun
31. Actually playing the games
32. Chance to be active, enjoy being active, using up excess energy
33. Being outside, outdoor sports, hate being inside
34. Competing, competition
35. Really enjoy specific sport(s)
36. Really dislike specific sport(s)
37. Love horses, water
38. Class where you don't have to think or work, a break
39. To be able to run, like running
40. For a change, prevent boredom

Socialization Value - Character Building

41. Learning sportsmanship
42. Learning teamwork, cooperation, working together
45. Learning to compete, to win and lose

Social Value

50. Being with your friends, playing with friends
51. Meeting, making new friends
52. No one to do it with
56. Being on a team, team spirit

Program Aspects

60. Equipment
61. Facilities
62. Variety of activities
63. Teacher
64. Teaching methods
65. Teacher favoring students, spending more time with some students
66. Changing - not enough time
67. Uniform required, shorts, changing into shorts
68. Exercises, warmups
69. Inactivity - lecture, explaining the sport, doing nothing, class cancelled
70. Co-ed classes - P.E. with boys
71. Not enough time
72. Too many students, not enough individual attention
73. Negative students - people fooling around, poor sports, other people spoiling game, arguing, cheating, fighting
74. Grading method
75. Feel not accepted if can't do it well, people laugh at you, not popular
76. Running, running the mile
77. Going to the next class after changing
78. Written exams
79. Fitness awards

Personal

80. The challenge, seeing if I can do it, seeing how good you are
81. I'm good at it, can do it best
82. I'm not good at it
83. Chance to show your ability
84. It's not difficult, rigorous, vigorous, don't have to practice, doesn't tire me out
85. Have been doing it a long time, do it very often
86. To be part of something, something to do, keeps you busy
87. Never get bored with it
88. Doing something boring
89. Have to do homework
90. Not enough time, don't have the chance
91. Don't have the facilities, opportunity, program

92. Parents won't let me
93. Have a job, have to work, babysit, family responsibilities
94. Involved in other activities
95. I'm lazier
96. I didn't want to
97. It's very tiring, takes effort - sore muscles

Miscellaneous

0. No response
1. Nothing - don't like it or don't dislike it
2. Everything
3. Chance to see things, seeing new things
4. Feeling of freedom, feeling free
5. You have to do things you don't like, aren't good at - being forced
6. Medical problem
7. I'm shy, feel self conscious
8. Want to get better in it
9. It's cool, refreshing
25. Like trying many new sports, new ways of doing it - novelty
26. The expensive equipment - money
27. When everyone is involved
28. Only certain people (the best) are picked, involved
29. Not enough competition - organized leagues
43. Unpleasantness of physical activity - sweating, smell, rainy days
44. Getting motivated to do it, making yourself do it
46. Makes you work hard, a good workout
47. Don't know how to play it right, don't know rules
48. Play it with my family, brothers, sisters
49. I don't like it
53. I like being rough
54. Getting out of the house, away from home
55. The speed, exhileration, excitement, action
57. I'm in a league
58. Like winning, hate losing
59. Getting hurt, roughness, it is dangerous
98. Other miscellaneous
99. Unable to interpret, inappropriate

APPENDIX H

Transformed Variables with Value Codes

Variable[a] Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
1. INTERSCH	VII 1A	1	1. None 2. One 3. Two 4. Three 5. Four or more
2. INTRAMUR	VII 1B	1	See variable 1
3. ORGANIZ	VII 1C	1	See variable 1
4. HOURS	VII 2	1	0.5 - 9.5 hours
5. SPRING	VII 2	1	0 - 14 activities
6. SUMMER	VII 2	1	0 - 13 activities
7. WINTER	VII 2	1	0 - 8 activities
8. TOTALACT	Var.5+6+7	3	0 - 35 activities
9. FREQ1	VII 3	1	1. Less than once a month 2. At least once or twice a month 3. Once a week or every weekend 4. At least two or three times a week 5. Every day without fail in season
10. FREQ2	VII 3	1	See variable 9
11. FREQ3	VII 3	1	See variable 9
12. FREQ4	VII 3	1	See variable 9
13. FAVFREQ	(Var.9+10 +11 +12)/4	4	See variable 9
14. LIVEVENT	VII 5a	1	1. Never 2. Once or twice per year 3. Once or twice per sport season 4. Once or twice per month 5. At least once or twice per week
15. TELEVIS	VII 5b	1	See variable 14
16. RADIO	VII 5c	1	See variable 14

[a] The abbreviations for the variables are found in Appendix I.

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
17. NEWSPAP	VII 5d	1	See variable 14
18. SECINV	(Var.15+16+17)/3	3	See variable 14
19. REALIST	IB: 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31	11	1. Like 2. Dislike
20. INVESTIG	IB: 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64	11	See variable 19
21. ARTIST	IB: 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32	11	See variable 19
22. SOCIAL	IB: 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65	11	See variable 19
23. ENTERPRI	IB: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33	11	See variable 19
24. CONVENT	IB: 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66	11	See variable 19
25. MASCULIN	IIA: 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58	20	1. Never or almost never true 2. Usually not true 3. Occasionally true 4. Usually true 5. Always or almost always true
26. FEMININE	IIA: 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59	20	See variable 25
27. SOCDESIR	IIA: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60	20	See variable 25
28. SEX ROLE	Var. 26 - Var. 25	40	-

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
29. ESTEEM	IIB: 1 - 10	10	1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree
30. TOMBOY	IIB: 11	1	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree
31. ACTPREF	IIB: 12	1	See variable 30
32. MOVESAT	III: 1 - 50	50	1. Have strong negative feelings against & wish change could somehow be made 2. Don't like, but can put up with 3. Have no particular feelings one way or the other 4. Am satisfied 5. Consider myself fortunate or lucky
33. BODYCAT	IV: 1- 43	43	See variable 32
34. PHYSED	V: 1 - 19	19	See variable 32
35. PESATISF	V: 23	1	1. Very unsatisfied 2. Unsatisfied 3. No feeling one way or the other 4. Satisfied 5. Very satisfied
36. BODYSAT	V: 24	1	See variable 35
37. PASOCIAL	VI A: 1 - 8	8	7-space semantic differential
38. HEALTH	VI B: 1 - 8	8	7-space semantic differential
39. THRILL	VI C: 1 - 8	8	7-space semantic differential
40. BEAUTY	VI D: 1 - 8	8	7-space semantic differential
41. RELEASE	VI E: 1 - 8	8	7-space semantic differential

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
42. TRAINING	VI F: 1 - 8	8	7-space semantic differential
43. COMPETIT	VI G: 1 - 8	8	7-space semantic differential
44. IMAGE	VI H: 1 - 8	8	7-space semantic differential
45. SIGOTH1	VII 6a	1	1. Don't know or not applicable (recoded 0) 2. Never 3. Once or twice per year 4. Once or twice per sport season 5. Once or twice per month 6. At least once or twice per week
46. SIGOTH2	VII 6b	1	See variable 45
47. SIGOTH3	VII 6c	1	See variable 45
48. SIGOTH4	VII 6d	1	See variable 45
49. SIGOTH5	VII 6e	1	See variable 45
50. SIGOTH6	VII 6f	1	See variable 45
51. SIGOTH7	VII 6g	1	See variable 45
52. SIGOTH8	VII 6h	1	See variable 45
53. SIGOTH9	VII 6i	1	See variable 45
54. FATHWITH	VII 7a	1	See variable 45
55. MOTHWITH	VII 7b	1	See variable 45
56. FATWATCH	VII 8a	1	See variable 45
57. MOTWATCH	VII 8b	1	See variable 45
58. ENCOURI	VII 9a	1	1. Not applicable (recoded 0) 2. Don't know 3. Not at all 4. Very little 5. Somewhat 6. A great deal

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
59. ENCOUR2	VII 9b	1	See variable 58
60. ENCOUR3	VII 9c	1	See variable 58
61. ENCOUR4	VII 9d	1	See variable 58
62. ENCOUR5	VII 9e	1	See variable 58
63. ENCOUR6	VII 9f	1	See variable 58
64. ENCOUR7	VII 9g	1	See variable 58
65. ENCOUR8	VII 9h	1	See variable 58
66. ENCOUR9	VII 9i	1	See variable 58
67. FATASPIR	VII 10a	1	See variable 58
68. MOTASPIR	VII 10b	1	See variable 58
69. SOTPART1	Var. 45 + 46 + 47 + 48 + 49 + 50 + 51 + 52 + 53	9	-
70. SOTPART	Var. 69/NVALID	9	-
71. SOTHENCI	Var. 58 + 59 + 60 + 61 + 62 + 63 + 64 + 65 + 66	9	-
72. SOTHENC	Var. 71/NVALID	9	-
73. FATHSOC	Var. 45 + 54 + 56 + 58 + 67	5	-
74. MOTHSOC	Var. 46 + 55 + 57 + 59 + 68	5	-
75. GRADE	VIII 1	1	1. Grade 6 2. Grade 7 3. Grade 8 4. Grade 9 5. Grade 10
76. AGE	VIII 2	1	1. 11 or younger 2. 12 3. 13 4. 14 5. 15 6. 16 7. 17 8. 18 9. 19 10. 20 or over

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
77. MENARCHE	VIII 3	1	1. Have not begun yet 2. 10 or under 3. 11 4. 12 5. 13 6. 14 7. 15 8. 16
78. FATHEDUC	VIII 4	1	1. Less than 7 years of school completed 2. Junior high school (completed Grade VII, VIII or IX) 3. Some high school (completed grade X or XI) 4. High school graduate 5. Some university training (1 year or more) 6. University degree 7. Vocational or technical training 8. Graduate or professional training after university degree 9. Don't know
79. MOTHEDUC	VIII 4	1	See variable 78
80. FATHOCC	VIII 5	1	See Blishen & McRoberts (1976) 990 Housewife--works at home 997 Retired, unemployed 998 Uninterpretable, unclassifiable 999 Subject doesn't know
81. MOTHOCC	VIII 6	1	See variable 80
82. RELIGION	VIII 7	1	1. Catholic 2. Protestant 3. Other 4. None
83. BROTHERS	VIII 8	1	1. none 2. only 1 3. 2 4. 3 5. 4 6. 5 or more

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
84. OLDBROTH	VIII 9	1	See variable 83
85. SISTERS	VIII 10	1	See variable 83
86. OLDSIST	VIII 11	1	See variable 83
87. YONBROTH	Var.83 - Var.84	2	0. no younger 1. 1 younger 2. 2 younger 3. 3 younger 4. 4 younger 5. 5 or more younger
88. YONSIST	Var.85 - Var.86	2	See variable 87
89. ORDINAL	Var.84 + Var.86	2	2. no older brothers or sisters 3. 1 older brother or sister 4. 2 older brothers or sisters 5. 3 older brothers or sisters 6. 4 older brothers or sisters 7. 5 older brothers or sisters 8. 6 older brothers or sisters 9. 7 older brothers or sisters 10. 8 older brothers or sisters 11. 9 older brothers or sisters 12. 10 or more older brothers or sisters
90. FAMILY	Var.83 + Var.85	2	See variable 89
91. SES	Recoding Var.80 and Var.81	2	1. 394 - 490 Very low 2. 297 - 393 Low 3. 168 - 278 Lower middle 4. 86 - 167 Upper middle 5. 21 - 85 High 6. 1 - 20 Very High
92. HEIGHT	VIII 12	1	47 - 71 inches
93. WEIGHT	VIII 13	1	50 - 183 pounds

Variable Name & No.	Questionnaire Part & Item No.	Total No. of Items	Value Code
94. HEIGHT3	Recoding Var.91 into percentiles	1	See Ross Laboratories (1976) 1. Below 10th percentile--extremely below average 2. 10 - 25th percentile--below average 3. 25 - 75th percentile -- average 4. 75 - 90th percentile -- above average 5. above 90th percentile -- extremely above average
95. WEIGHT4	Recoding Var.92 into percentiles	1	See variable 94
96. ATTITUDE	Teacher's rating of attitude in physical education	1	1. Very poor 2. Poor 3. Neutral 4. Good 5. Very good
97. ABILITY	Teacher's rating of physical ability or skills	1	1. Well below average 2. Slightly below average 3. Average 4. Slightly above average 5. Well above average

APPENDIX I

Explanation of Variable Abbreviations

Explanation of Variable Abbreviations

Abbreviation	Explanation
*Intersch	Number of interschool teams
*Intramur	Number of intramural activities
*Organiz	Number of community organized activities
*Hours	Average hours of participation per day
*Totalact	Total activities
*Favfreq	Frequency of favourite activities
*Livevent	Frequency of attending live sports events
*Secinv	Secondary involvement
*Realist	Realistic interest dimension of Holland's SDS
*Investig	Investigative interest dimension of Holland's SDS
Artist	Artistic interest dimension of Holland's SDS
Social	Social interest dimension of Holland's SDS
Enterpri	Enterprising interest dimension of Holland's SDS
Convent	Conventional interest dimension of Holland's SDS
*Sex Role	Sex Role score from Bem's SRI
*Esteem	Esteem score from Rosenberg's Self Esteem Scale
*Tomboy	Degree of tomboyism when younger
*Actpref	Preference of active activities over quiet activities
*Movesat	Movement satisfaction score from Nelson and Allen's Scale
*Facmov1	Movement satisfaction factor--satisfaction with sports skills
*Facmov2	Movement satisfaction factor--satisfaction with everyday movement
*Facmov3	Movement satisfaction factor--satisfaction with movement to music
*Bodycat	Body cathexis score from Secord and Jourard's Scale

Abbreviation	Explanation
*Physed	Satisfaction with physical education
*Pasocial	Attitude toward physical activity as a social experience
*Health	Attitude toward physical activity for health and fitness
*Thrill	Attitude toward physical activity as the pursuit of vertigo
*Beauty	Attitude toward physical activity as an aesthetic experience
*Release	Attitude toward physical activity as catharsis
*Training	Attitude toward physical activity as an ascetic experience
*Competit	Attitude toward physical activity for competition
*Image	Image of the female athlete
*Sotpart	Significant others' participation in physical activity
*Sothenc	Significant others' encouragement for physical activity
*Mothsoc	Mother's socialization influence
*Fathsoc	Father's socialization influence
*Equipmen	Amount of sport equipment
*SES	Socio-economic status
Ordinal	Ordinal position in family
Yonbroth	Number of younger brothers
Oldbroth	Number of older brothers
Menarche	Age at which subject began menstruating
Age	Age on day of testing
Height	Height in inches
Weight	Weight in inches

*Variables included in canonical correlation and factor analysis.

APPENDIX J

Frequency of Missing Items of Instruments

Table 56

Missing Items--Holland's Self Directed Search Scales

No. of Items Missing	Realistic		Investigative		Artistic		Social		Enterpris.		Conventional	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
0	620	539	621	547	624	556	622	548	613	547	618	549
1	18	18	14	11	16	4	15	9	25	11	17	7
2[a]	1	3	3	0	0	0	2	1	2	2	3	2
3[b]	1	0	1	1	0	0	0	1	0	0	1	1
4	2	1	0	1	1	1	0	0	0	0	0	0
5	0	0	1	0	1	0	0	1	2	1	0	1
6-10	0	0	1	1	0	0	2	1	0	0	2	1
11 (complete scale)	19	14	20	14	19	14	20	14	19	14	20	14
Total Not Included in Analysis	22	15	23	17	21	15	22	17	21	15	23	17
% of Missing Subjects	3.3%	2.6%	3.5%	3.0%	3.2%	2.6%	3.3%	3.0%	3.2%	2.6%	3.5%	3.0%

[a] Subjects included in analysis.

[b] Subjects not included in analysis.

Table 57

Missing Items--Movement Satisfaction and Body Cathexis Instruments

Movement Satisfaction No. of Items Missing	Year 1	Year 2	Body Cathexis No. of Items Missing	Year 1	Year 2
0	480	476	0	472	479
1	91	61	1	88	58
2	29	19	2	30	15
3-4	12	4	3	8	1
5-6	5	0	4-5	6	1
7-9	3	0	6-7	1	0
10[a]	0	1	8[a]	0	0
10-15[b]	4	0	9-13[b]	3	0
16-20	3	0	14-17	3	0
21-25	4	0	18-21	3	0
26-30	2	0	22-25	1	0
31-35	1	0	26-29	0	0
36-40	2	0	30-33	1	0
41-45	1	0	34-37	3	1
46-49	1	0	38-42	2	0
50 50(complete scale)	23	14	43 (complete scale)	40	20
Total not Included in Analysis	41/661	14/575	Total not Included in Analysis	56/661	21/575
% of Missing Subjects	6.2%	2.4%	% of Missing Subjects	8.5%	3.7%

[a] Subjects included in analysis

[b] Subjects not included in analysis

Table 58

Missing Items--Sex Role Orientation and Physical Education Instruments

No. of Items Missing	Masculine Scale		Feminine Scale		Physical Education	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
0	534	489	544	498	438	496
1	80	58	70	51	20	17
2	12	10	14	7	12	9
3	7	0	4	0	162[c]	0
4[a]	1	0	1	1	10	1
5-9[b]	1	0	2	0	6	1
10-19	6	3	7	3	2	1
20(complete scale)	20	15	19	15	11	50[d]
Total Not Included in Analysis	27/661	18/575	28/661	18/575	19/661	52/575
% of Missing Subjects	4.1%	3.1%	4.2%	3.1%	2.9%	9.0%

[a] Subjects included in analysis.

[b] Subjects not included in analysis.

[c] Grade 6 subject did not answer items 4, 5, and 15 because they were not required to change for physical education--hence the large number missing 3 items.

[d] 50 Grade 11 subjects were not enrolled in physical education.

Table 59

Missing Items--Semantic Differential Scales

No. of Items Missing	Social Year 1	Social Year 2	Health Year 1	Health Year 2	Thrill Year 1	Thrill Year 2	Beauty Year 1	Beauty Year 2
0	642	568	646	572	638	566	633	565
1	9	6	5	2	5	7	4	7
2	1		0	0	0	0	1	1
3-5	0	0	0	0	0	0	0	0
6-7	0	1	1	1	0	1	1	1
8 (complete scale)	9	0	9	0	18	1	22	1
Subjects not Included in Analysis	9/661	1/575	10/661	1/575	18/661	2/575	23/661	2/575
% of Missing Subjects	1.4%	.2%	1.5%	.2%	2.7%	.3%	3.5%	.3%

No. of Items Missing	Release Year 1	Release Year 2	Training Year 1	Training Year 2	Competition Year 1	Competition Year 2	Image Year 1	Image Year 2
0	640	563	632	564	628	562	622	556
1	5	4	5	4	4	5	6	4
2	0	1	1	0	0		0	0
3-5	0	2	0	2	0	0	0	2
6-7	0	1	1	1	0	2	1	2
8 (complete scale)	16	4	22	4	29	6	32	11
Subjects not Included in Analysis	16/661	7/575	23/661	7/575	29/661	8/575	33/661	15/575
% of Missing Subjects	2.4%	1.2%	3.5%	1.2%	4.4%	1.4%	5.0%	2.6%

Table 60

Subjects Missing Significant Others

Significant Other	No. Missing[a] Year 1	% Missing Year 1	No. Missing[a] Year 2	% Missing Year 2
Father	53	8.0%	42	7.4%
Mother	11	1.7%	13	2.3%
Older brother	297	44.9%	269	47.0%
Older sister	311	47.0%	277	48.5%
Younger brother	354	53.6%	323	57.0%
Younger sister	382	57.8%	351	61.5%
Girl friends	15	2.3%	5	.9%
Boy friend	289	43.7%	238	43.5%
Teacher/coach	112	16.9%	87	15.4%

[a] Derived from "not applicable" responses of question VII 9, significant others' encouragement.

APPENDIX K

Responses to Open-ended Questions Regarding Physical Education

Table 61

Most Important Reason for Having Physical Education

Reason	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Health-Fitness related	117 61.3%	76 65.0%	60 59.4%	73 70.9%	89 74.2%	415 65.7%
Educational Value	27 14.1%	19 16.2%	25 24.8%	13 12.6%	12 10.0%	96 15.3%
Enjoyment	25 13.1%	16 13.6%	6 5.8%	11 10.7%	9 7.4%	67 10.6%
Socialization Value	9 4.8%	2 1.7%	4 4.0%	2 1.9%	6 5.0%	23 3.6%
Competition, Challenge, to Show Ability	6 3.1%	1 .9%	1 1%	1 1%	2 1.7%	11 1.7%
Social Reasons	1 .5%	1 .9%	1 1%	1 1%	2 1.7%	6 .9%
Miscellaneous, can't interpret	6 3.1%	2 1.7%	4 4.0%	2 1.9%	0 0%	14 2.2%
Total	191	117	101	103	120	632

Table 62

Factors Liked Most About

Physical Education

Factor	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Playing games, a specific sport	87 45.6%	31 25.8%	31 31.3%	34 33.4%	38 31.9%	221 35.0%
Enjoyment	25 13.1%	29 24.2%	18 18.2%	10 9.8%	22 18.5%	104 16.5%
Variety of Activities	17 8.9%	21 17.5%	18 18.2%	19 18.6%	17 14.3%	92 14.6%
Health-Fitness Related	14 7.3%	15 12.5%	9 9.1%	10 9.8%	13 10.9%	61 9.7%
Educational Value	13 6.8%	8 6.7%	6 6.1%	5 4.9%	9 7.6%	41 6.5%
Social Reasons	9 4.7%	3 2.5%	8 8.1%	8 7.8%	4 3.4%	32 [illegible]
Other Aspects of P.E. Program	7 3.7%	4 3.3%	3 3.0%	3 2.9%	4 3.4%	[illegible]
Competition, Challenges, to show ability	6 3.1%	5 4.2%	1 1.0%	3 2.9%	5 4.2%	[illegible]
Socialization Value	2 1.0%	1 .8%	1 1.0%	0 0%	0 0%	[illegible]
Miscellaneous, can't interpret	7 3.7%	1 .8%	2 2.0%	7 6.9%	5 4.2%	22 3.5%
Nothing	4 2.1%	0 0%	1 1.0%	2 2.0%	1 .8%	8 1.2%
Everything	0 0%	2 1.7%	1 1.0%	1 1.0%	1 .8%	5 .8%
Total	191	120	99	102	119	631

Table 63

Factors Liked Least About

Physical Education

Factor	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Dislike a specific sport, Being forced to do an activity don't like	52 28.7%	30 26.8%	25 25.5%	26 25.6%	31 26.1%	164 26.8%
Fitness-Related Exercises, Warmups, Running	43 23.7%	11 9.8%	8 8.2%	21 20.8%	16 13.5%	99 16.2%
Teacher, Teaching and grading method	15 8.2%	9 8.0%	11 11.2%	2 2.0%	5 4.2%	42 6.9%
Changing, Uniform required	2 1.1%	7 6.3%	16 16.4%	9 8.9%	6 5.0%	40 6.5%
Feel inferior, self conscious, Favoring good players	9 5.0%	5 4.4%	6 6.1%	10 9.9%	1 .8%	31 5.1%
Inactivity, Lecture	7 3.8%	8 7.1%	5 5.1%	3 3.0%	4 3.4%	27 4.4%
Written exams	0 0%	6 5.4%	0 0%	0 0%	18 15.1%	24 3.9%
Negative players - poor sports	3 1.6%	6 5.4%	4 4.1%	5 4.9%	4 3.4%	22 3.6%
Exertion required, Sweating, Getting hurt	4 2.2%	3 2.7%	0 0%	3 3.0%	6 5.0%	16 2.6%
Practicing, Learning sport	6 3.3%	2 1.8%	2 2.0%	2 2.0%	2 1.7%	14 2.3%
Competition, Team play	2 1.1%	3 2.7%	1 1.0%	3 3.0%	5 4.2%	14 2.3%
Too many students	4 2.2%	1 .9%	2 2.0%	3 3.0%	1 .8%	11 1.8%
Co-ed classes	3 1.6%	0 0%	5 5.1%	0 0%	0 0%	8 1.3%
Facilities, Equipment	0	1 .9%	3 3.1%	1 1.0%	2 1.7%	7 1.1%
Miscellaneous, can't interpret	11 6.0%	3 2.7%	0 0%	4 4.0%	4 3.4%	22 3.6%
Nothing*	13 7.1%	12 10.7%	6 6.1%	2 2.0%	6 5.0%	39 6.4%
Not enough time*	8 4.4%	5 4.4%	4 4.1%	7 6.9%	8 6.7%	32 5.2%
Total	182	112	98	101	119	612

*Positive reasons denoting liking of physical education classes.

APPENDIX L

Responses to Open-ended Questions Regarding Physical Activity

Table 64

Factors Liked Most About

Physical Activity

Factor	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Fun, Enjoyment	65 35.5%	37 30.3%	32 32.0%	30 29.7%	31 26.7%	195 31.3%
Health-Fitness related	43 23.5%	27 22.1%	27 27.0%	29 28.7%	49 42.2%	175 28.1%
To be active, Play games	30 16.4%	17 13.9%	10 10.0%	7 6.9%	9 7.8%	73 11.7%
Specific sport, Variety of activities, New Sport	22 12.0%	10	7 7.0%	4 4.0%	0 0%	43 6.9%
Challenge, Competition, To show ability	5 2.7%	5	6 6.0%	15 14.8%	8 6.9%	39 6.3%
Social reasons	4 2.2%	11	7 7.0%	6 5.9%	8 6.9%	36 5.8%
Feelings - speed, excitement, coolness, freedom	1 .6%	4 3.3%	4 4.0%	2 2.0%	3 2.6%	14 2.3%
Something to do	2 1.1%	3	1 1.0%	4 4.0%	3 2.6%	13 2.1%
To learn sport, Develop skill	1 .6%	4 3.3%	1 1.0%	1 1.0%	1 .9%	8 1.3%
Nothing	3 1.6%	0 0%	0 0%	0 0%	0 0%	3 .5%
Everything	2 1.1%	0 0%	1 1.0%	0 0%	2 1.7%	5 .8%
Miscellaneous, can't interpret	5 2.7%	4 3.3%	4 4.0%	3 3.0%	2 1.7%	18 2.9%
Total	183	122	100	101	116	622

Table 65

Factors Liked Least About

Physical Activity

Factor	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Exertion required, Sweating, tiring	28 16.3%	23 19.8%	19 20.9%	33 35.5%	40 36.1%	143 24.5%
Nothing*	34 19.8%	24 20.6%	14 15.3%	16 17.2%	8 7.2%	96 16.5%
Not enough time*	6 3.5%	6 5.1%	7 7.7%	1 1.1%	5 4.5%	25 4.3%
Dislike a specific sport, A boring activity	30 17.4%	13 11.2%	9 9.9%	5 5.4%	4 3.6%	61 10.5%
Running, Exercises, Warmups	16 9.3%	6 5.2%	5 5.5%	3 3.2%	8 7.2%	38 6.5%
Getting hurt	8 4.7%	10 8.6%	8 8.8%	7 7.5%	3 2.7%	36 6.2%
Aspects of physical education	13 7.6%	6 5.2%	3 3.3%	4 4.3%	3 2.7%	29 4.9%
Negative players - poor sports	7 4.1%	6 5.2%	8 8.8%	5 5.4%	2 1.8%	28 4.8%
Feel inferior, Don't know how, Only best involved	5 2.9%	7 6.0%	4 4.4%	4 4.3%	4 3.6%	24 4.1%
No program, facilities, Expensive equipment	0 0%	3 2.6%	1 1.1%	3 3.2%	8 7.2%	15 2.6%
Competition	2 1.2%	3 2.6%	2 2.2%	5 5.4%	3 2.7%	15 2.6%
Being forced to participate	3 1.7%	1 .9%	3 3.3%	2 2.2%	6 5.4%	15 2.6%
Practicing	3 1.7%	1 .9%	1 1.1%	1 1.1%	4 3.6%	10 1.7%
Hate losing	4 2.3%	1 .9%	1 1.1%	2 2.2%	1 .9%	9 1.5%
No one to do it with	3 1.7%	1 .9%	1 1.1%	0 0%	3 2.7%	8 1.4%
Medical problems	0 0%	1 .9%	0 0%	0 0%	3 2.7%	4 .7%
Miscellaneous, can't interpret	10 5.8%	4 3.4%	5 5.5%	2 2.2%	6 5.4%	27 4.6%
Total	172	116	91	93	111	583

*Positive reason denoting a liking of physical activity.

Table 66

Reasons for Most Favourite

Physical Activity

Reason	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Fun, enjoyment	81 40.5%	38 32.8%	39 40.6%	31 31.0%	41 34.7%	230 36.5%
Fitness related	21 10.5%	6 5.2%	9 9.4%	11 11.0%	8 6.8%	55 8.7%
I'm good at it	14 7.0%	12 10.3%	13 13.5%	5 5.0%	9 7.6%	53 8.4%
Social reasons	3 1.5%	8 6.9%	7 7.3%	11 11.0%	8 6.8%	37 5.9%
Speed, excitement	12 6.0%	6 5.2%	5 5.2%	4 4.0%	7 5.9%	34 5.4%
Love horses/water	15 7.5%	4 3.5%	6 6.3%	3 3.0%	6 5.1%	34 5.4%
To be active, outside	8 4.0%	5 4.3%	2 2.1%	7 7.0%	5 4.2%	27 4.3%
Challenge, Competition	5 2.5%	3 2.6%	3 3.1%	8 8.0%	7 5.9%	26 4.1%
Doing it a long time	6 3.0%	7 6.0%	3 3.1%	3 8.0%	5 4.2%	24 3.8%
Novelty - variety of activities, New sport	3 1.5%	5 4.3%	2 2.1%	4 4.0%	5 4.2%	19 3.0%
Feelings - cool, freedom	3 1.5%	2 1.7%	1 1.0%	0 0%	3 2.5%	9 1.4%
Have equipment, facilities	2 1.0%	1 .8%	0 0%	0 0%	3 2.5%	6 1.0%
Something to do	2 1.0%	2 1.7%	0 0%	1 1.0%	0 0%	5 .8%
Miscellaneous, can't interpret	25 12.5%	17 14.7%	6 6.3%	12 12.0%	11 9.3%	71 11.3%
Total	200	116	96	100	118	630

Table 67

Responses to "Why Do You Not Participate As Much As Last Year?"

Response	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Not enough time	9 22.5%	8 29.7%	6 26.1%	3 17.6%	7 15.2%	33 21.6%
Don't want to	2 5.0%	5 18.5%	3 13.0%	4 23.5%	2 4.3%	16 10.5%
Homework	3 7.5%	1 3.7%	0 0%	3 17.6%	7 15.2%	14 9.2%
Involved in other activities	4 10.0%	1 3.7%	3 13.0%	0 0%	4 8.7%	12 7.8%
Work at home, Job, Babysit	2 5.0%	0 0%	0 0%	2 11.8%	7 15.2%	11 7.2%
No facilities, programs	1 2.5%	4 14.8%	2 8.7%	1 5.9%	2 4.3%	10 6.5%
Not good at it, Shy, self conscious, Don't know how	1 2.5%	2 7.4%	1 4.3%	0 0%	5 10.9%	9 5.9%
I'm lazier	3 7.5%	0 0%	2 8.7%	1 5.9%	3 6.5%	9 5.9%
No one to do it with	3 7.5%	0 0%	1 4.3%	0 0%	2 4.3%	6 3.9%
Medical problem	0 0%	2 7.4%	0 0%	2 11.8%	2 4.3%	6 3.9%
Competition	1 2.5%	0 0%	1 4.3%	0 0%	1 2.2%	3 2.0%
Miscellaneous, Can't interpret	11 27.5%	4 14.8%	4 17.4%	1 5.9%	4 8.7%	24 15.6%
Total	40	27	23	17	46	153

Table 68

Responses to "Why Do You Not Participate More?"

Response	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Not enough time	59 43.4%	40 45.0%	36 48.6%	42 56.0%	42 44.2%	219 46.7%
No facilities, programs, Expensive equipment	8 5.9%	16 18.0%	8 10.8%	8 10.7%	6 6.3%	46 9.8%
Not good at it, Shy, self conscious, Don't know how	6 4.4%	7 7.9%	6 8.1%	7 9.3%	10 10.5%	36 7.7%
Involved in other activities	13 9.6%	0 0%	4 5.4%	4 5.3%	6 6.3%	27 5.8%
Homework	3 2.2%	5 5.6%	2 2.7%	3 4.0%	10 10.5%	23 4.9%
Work at home, Job, Babysit	4 2.9%	3 3.4%	2 2.7%	2 2.7%	5 5.3%	16 3.4%
Effort required	6 4.4%	2 2.2%	0 0%	1 1.3%	3 3.2%	12 2.6%
No one to do it with	3 2.2%	2 2.2%	3 4.1%	1 1.3%	2 2.1%	11 2.3%
Don't want to	3 2.2%	3 3.4%	2 2.7%	1 1.3%	0 0%	9 1.9%
Parents	3 2.2%	0 0%	2 2.7%	0 0%	0 0%	5 1.1%
Medical problem	0 0%	2 2.2%	0 0%	1 1.3%	2 2.1%	5 1.1%
Boring activity	2 1.5%	1 1.1%	0 0%	0 0%	0 0%	3 .6%
Getting hurt	0 0%	1 1.1%	1 1.4%	0 0%	1 1.1%	3 .6%
Competition	0 0%	0 0%	1 1.4%	0 0%	1 1.1%	2 .4%
Miscellaneous, Can't interpret	26 19.1%	7 7.9%	7 9.4%	5 6.7%	7 7.3%	52 11.1%
Total	136	89	74	75	95	469

APPENDIX M

Types of Activities

Table 69

Interschool Teams

Sport	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total[a]
Track and Field	17	22	26	32	8	105
Volleyball	23	10	17	28	10	88
Basketball	0	8	10	14	12	44
Badminton	6	0	1	0	2	9
Gymnastics	0	2	1	1	2	6
Team Handball	5	0	0	0	0	5
Team Keewee	0	2	1	1	0	4
Softball	0	2	0	1	0	3
Swimming	0	0	0	0	3	3
Field Hockey	0	0	0	0	2	2
Soccer	0	1	0	1	0	2
Cross Country Running	0	0	1	0	1	2
Curling	0	0	0	0	1	1
Racquetball	1	0	0	0	0	1
Handball	1	0	0	0	0	1
Total	53	47	57	78	43	276

[a] A single student may have participated on more than one team. There were not 276 students participating on interschool teams but 276 teams reported by different students. 194 students or 29.7% of sample participated on at least one team.

Table 70

Community Organized Activities

Sport	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total[a]
Softball	38	28	18	15	24	123
Swimming	62	21	9	14	16	122
Dance	20	15	5	2	13	55
Soccer	8	5	8	5	8	34
Figure Skating	12	7	3	7	5	34
Gymnastics	9	10	3	2	5	29
Downhill Skiing	1	5	6	1	9	22
Basketball	4	1	2	6	5	18
Ringette	3	4	4	2	1	14
Tennis	4	1	1	3	4	13
Horseback Riding	2	1	2	2	3	10
Bowling	4	0	1	2	1	8
Track and Field	0	1	2	0	5	8
Skating	6	0	0	0	0	6
Ballet	2	1	0	1	1	5
Ethnic Dancing	0	3	0	0	2	5
Other	9	5	3	9	7	33
Total	185	110	67	72	110	539

[a] A single student may have participated in more than one activity. There were not 539 students participating in organized activities but 539 activities reported by different students. 358 students or 55.4% of sample participated in at least 1 activity.

Table 71

Summer Activities

Activity	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Swimming	149 16.8%	95 16.1%	71 13.2%	79 14.3%	96 16.7%	490 15.6%
Cycling	110 12.4%	67 11.4%	66 12.3%	65 11.8%	79 13.7%	387 12.3%
Softball	78 8.8%	52 8.8%	54 10.1%	58 10.5%	41 7.1%	283 9.0%
Tennis	45 5.1%	48 8.1%	42 7.8%	51 9.2%	51 8.9%	237 7.5%
Badminton	36 4.1%	23 3.9%	34 6.3%	35 6.3%	36 6.3%	164 5.2%
Camping	68 7.7%	33 5.6%	8 1.5%	22 4.0%	32 5.6%	163 5.2%
Soccer	40 4.5%	30 5.1%	35 6.5%	26 4.7%	16 2.8%	147 4.7%
Football	22 2.5%	22 3.7%	31 5.8%	37 6.7%	25 4.3%	137 4.4%
Jogging, Running	36 4.1%	22 3.7%	25 4.7%	26 4.7%	26 4.5%	135 4.3%
Frisbee	24 2.7%	10 1.7%	19 3.5%	22 4.0%	19 3.3%	94 3.0%
Horseback Riding	19 2.1%	19 3.2%	20 3.7%	10 1.8%	24 4.2%	92 2.9%
Skateboarding	37 4.2%	15 2.5%	16 3.0%	11 2.0%	7 1.2%	86 2.7%
Hiking	25 2.8%	15 2.5%	5 .9%	20 3.6%	19 3.3%	84 2.7%
Water Skiing	10 1.1%	17 2.9%	15 2.8%	13 2.4%	12 2.1%	67 2.1%
Volleyball	15 1.7%	8 1.4%	16 3.0%	16 2.9%	6 1.0%	61 1.9%
Walking, Walk Dog	14 1.6%	9 1.5%	8 1.5%	13 2.4%	15 2.6%	59 1.9%
Roller Skating	13 1.5%	14 2.4%	8 1.5%	2 .4%	9 1.6%	46 1.5%
Basketball	6 .7%	12 2.0%	12 2.2%	8 1.4%	4 .7%	42 1.3%
Fishing	12 1.4%	9 1.5%	6 1.1%	4 .7%	4 .7%	35 1.1%
Play Catch	7 .8%	6 1.0%	6 1.1%	5 .9%	9 1.6%	33 1.1%

Table 72

Spring/Fall Activities

Activity	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Cycling	114 13.7%	60 12.1%	48 11.5%	58 14.0%	76 18.5%	356 13.8%
Softball	106 12.7%	70 14.1%	54 12.9%	58 14.0%	46 11.2%	334 13.0%
Swimming	99 11.9%	51 10.3%	52 12.4%	48 11.6%	43 10.5%	293 11.4%
Soccer	68 8.2%	42 8.5%	34 8.1%	25 6.0%	20 4.9%	189 7.3%
Tennis	34 4.1%	34 6.8%	25 6.0%	29 7.0%	29 7.1%	151 5.9%
Jogging, Running	36 4.3%	25 5.0%	26 6.2%	28 6.8%	32 7.8%	147 5.7%
Football	28 3.4%	20 4.0%	32 7.6%	22 5.3%	24 5.9%	126 4.9%
Badminton	27 3.2%	15 3.0%	27 6.4%	26 6.3%	11 2.7%	106 4.1%
Frisbee	30 3.6%	8 1.6%	11 2.6%	11 2.7%	11 2.7%	71 2.8%
Skateboarding	30 3.6%	12 2.4%	10 2.4%	9 2.2%	4 1.0%	65 2.5%
Volleyball	13 1.6%	14 2.8%	15 3.6%	16 3.9%	6 1.5%	64 2.5%
Walking, Walking Dog	16 1.9%	12 2.4%	6 1.4%	12 2.9%	15 3.7%	61 2.4%
Basketball	7 .8%	17 3.4%	14 3.3%	10 2.4%	6 1.5%	54 2.1%
Horseback Riding	8 1.0%	9 1.8%	10 2.4%	4 1.0%	14 3.4%	45 1.7%
Roller Skating	17 2.0%	10 2.0%	6 1.4%	5 1.2%	4 1.0%	42 1.6%
Dancing	17 2.0%	9 1.8%	2 .5%	3 .7%	10 2.4%	41 1.6%
Playing Catch	9 1.1%	7 1.4%	6 1.4%	9 2.2%	7 1.7%	38 1.5%
Hiking	11 1.3%	6 1.2%	1 .2%	6 1.4%	10 2.4%	34 1.3%
Camping	11 1.3%	6 1.2%	4 1.0%	5 1.2%	5 1.2%	31 1.2%
Murderball	18 2.2%	4 .8%	2 .5%	0 0%	0 0%	24 .9%
Skipping	21 2.5%	0 0%	1 .2%	0 0%	0 0%	22 .9%
Track and Field	6 1.7%	5 1.0%	4 1.0%	2 .5%	3 .7%	20 .8%
Gymnastics	6 .7%	2 .4%	2 .5%	4 1.0%	5 1.2%	19 .7%
Races, Tag	9 1.1%	6 1.2%	2 .5%	2 .5%	0 0%	19 .7%
Dodgeball	10 1.2%	8 1.6%	0 0%	0 0%	0 0%	18 .7%

Table 73

Winter Activities

Activity	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Skating	135 26.5%	83 24.3%	68 27.1%	67 28.0%	68 23.1%	421 25.7%
Tobogganning	96 18.9%	52 15.2%	38 15.1%	39 16.3%	39 13.2%	264 16.1%
Skiing	45 8.8%	52 15.2%	40 15.9%	41 17.2%	62 21.0%	240 14.7%
Snowball Fights	59 11.6%	39 11.4%	17 6.8%	9 3.8%	7 2.4%	131 8.0%
Swimming	25 4.9%	20 5.8%	15 6.0%	17 7.1%	19 6.4%	96 5.9%
Snowmen, Playing in Snow	35 6.9%	9 2.6%	4 1.6%	0 0%	0 0%	48 2.9%
Skidooing	18 3.5%	6 1.8%	4 1.6%	6 2.5%	12 4.1%	46 2.8%
Hockey	11 2.2%	15 4.4%	9 3.6%	8 3.3%	2 .7%	45 2.8%
Basketball	4 .8%	5 1.5%	9 3.6%	6 2.5%	9 3.1%	33 2.0%
Cross Country Skiing	1 .2%	7 2.0%	4 1.6%	6 2.5%	14 4.7%	32 2.0%
Walking, Walk Dog	5 1.0%	7 2.0%	5 2.0%	4 1.7%	7 2.4%	28 1.7%
Dance	8 1.6%	6 1.8%	1 .4%	2 .8%	8 2.7%	25 1.5%
Snowshoeing	15 2.9%	2 .6%	1 .4%	1 .4%	6 2.0%	25 1.5%
Figure Skating	6 1.2%	3 .9%	2 .8%	5 2.1%	4 1.4%	20 1.2%
Jogging, Running	6 1.2%	5 1.5%	6 2.4%	0 .0%	2 .7%	19 1.2%
Roller Skating	3 .6%	6 1.8%	1 .4%	2 .8%	6 2.0%	18 1.1%
Ringette	7 1.4%	4 1.2%	3 1.2%	2 .8%	1 .3%	17 1.0%
Volleyball	1 .2%	2 .6%	3 1.2%	5 2.1%	3 1.0%	14 .9%
Gymnastics	1 .2%	2 .6%	4 1.6%	3 1.3%	3 1.0%	13 .8%
Fishing (Ice)	6 1.2%	0 0%	3 1.2%	2 .8%	2 .7%	13 .8%

Table 74

Four Most Favourite Activities

Activity	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Swimming	133 16.5%	59 11.9%	50 12.6%	49 12.1%	67 14.1%	358 13.9%
Cycling	98 12.1%	59 11.9%	37 9.3%	53 13.1%	58 12.2%	305 11.8%
Softball	92 11.4%	57 11.5%	42 10.6%	50 12.3%	30 6.3%	271 10.5%
Tennis	31 3.8%	31 6.3%	27 6.8%	32 7.9%	38 8.0%	159 6.2%
Downhill Skiing	20 2.5%	19 3.8%	19 4.8%	23 5.7%	45 9.5%	126 4.9%
Skating	43 5.3%	18 3.6%	16 4.0%	16 4.0%	15 3.2%	108 4.2%
Badminton	18 2.2%	14 2.8%	20 5.0%	17 4.2%	25 5.3%	94 3.6%
Soccer	25 3.1%	23 4.7%	23 5.8%	11 2.7%	11 2.3%	93 3.6%
Jogging, Running	27 3.3%	15 3.0%	15 3.8%	15 3.7%	16 3.4%	88 3.4%
Football	19 2.4%	14 2.8%	20 5.0%	19 4.7%	16 3.4%	88 3.4%
Volleyball	14 1.7%	17 3.4%	16 4.0%	26 6.4%	11 2.3%	84 3.3%
Horseback Riding	19 2.4%	22 4.5%	18 4.5%	6 1.5%	16 3.4%	81 3.1%
Camping	25 3.1%	24 4.9%	8 2.0%	8 2.0%	12 2.5%	77 3.0%
Basketball	9 1.1%	13 2.6%	13 3.3%	11 2.7%	12 2.5%	58 2.2%
Dancing	20 2.5%	13 2.6%	7 1.8%	2 .5%	9 1.9%	51 2.0%
Skateboarding	23 2.9%	9 1.8%	11 2.8%	5 1.2%	3 .6%	51 2.0%
Rollerskating	23 2.9%	11 2.2%	6 1.5%	3 .7%	6 1.3%	49 1.9%
Walking, Walking Dog	12 1.5%	7 1.4%	3 .8%	3 .7%	9 1.9%	34 1.3%
Hiking	6 .7%	7 1.4%	2 .5%	7 1.7%	11 2.3%	33 1.3%
Murderball	21 2.6%	2 .4%	2 .5%	1 .2%	0 0.0%	26 1.0%

APPENDIX N

Favourite Female Sports Participants

Table 75

Favourite Female Participants

Name	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Nadia Comaneci (Gymnastics)	20 40.0%	20 50.0%	12 31.6%	10 25.0%	4 10.3%	66 31.9%
A Personal Friend	13 26.0%	6 15.0%	10 26.3%	0 0%	4 10.3%	33 15.9%
Chris Evert (Tennis)	1 2.0%	2 5.0%	5 13.2%	9 22.5%	4 10.3%	21 10.1%
Karen Magnussen (Figure Skating)	3 6.0%	0 0%	5 13.2%	3 7.5%	2 5.1%	13 6.3%
Billy Jean King (Tennis)	1 2.0%	4 10.0%	1 2.6%	3 7.5%	4 10.3%	13 6.3%
Dorothy Hamel (Figure Skating)	3 6.0%	1 2.5%	1 2.6%	5 12.5%	1 2.6%	11 5.3%
Becky Smith (Swimming)	0 0%	2 5.0%	0 0%	3 7.5%	5 12.8%	10 4.8%
Diane Jones (Track and Field)	0 0%	0 0%	0 0%	3 7.5%	2 5.1%	5 2.4%
Subject's Mother	1 2.0%	1 2.5%	2 5.3%	0 0%	0 0%	4 1.9%
Lynn Nightingale (Figure Skating)	0 0%	2 5.0%	1 2.6%	0 0%	1 2.6%	4 1.9%
Nancy Green (Skiing)	1 2.0%	0 0%	0 0%	0 0%	2 5.1%	3 1.4%
Subject's Sister	1 2.0%	0 0%	1 2.6%	0 0%	1 2.6%	3 1.4%
Abby Hoffman (Track and Field)	0 0%	0 0%	0 0%	0 0%	3 7.7%	3 1.4%
Olga Korbut (Gymnastics)	0 0%	0 0%	0 0%	1 2.5%	2 5.1%	3 1.4%
Karen Kelsel (Gymnastics)	0 0%	0 0%	0 0%	1 2.5%	1 2.6%	2 1.0%
Bionic Woman	2 4.0%	0 0%	0 0%	0 0%	0 0%	2 1.0%
Myself	1 2.0%	0 0%	0 0%	1 2.5%	0 0%	2 1.0%
Evonne Goolagong (Tennis)	1 2.0%	0 0%	0 0%	0 0%	1 2.6%	2 1.0%
Other	3 6.0%	2 5.0%	2 5.3%	2 5.0%	2 5.1%	11 5.3%
Total	51	40	40	41	39	211

APPENDIX O

Comparison of Participation Variables by Pairs of Grades

Table 76

Comparison of Participation Variables by Pairs of Grades--Year 1

Pairs of Grades		First Grade Higher	Second Grade Higher
6	8	Intramur Organiz Hours Favfreq	Intersch Totalact
6	9	Organiz Hours* Favfreq	Intersch Intramur Totalact
6	10	Intramur* Hours* Favfreq Totalact	Intersch Organiz
7	8	Intramur Organiz Hours Favfreq	Intersch Totalact
7	9	Organiz Hours Favfreq	Intersch Intramur Totalact
7	10	Intersch Intramur* Hours Favfreq Totalact	Organiz
8	10	Intersch Intramur* Hours Favfreq Totalact	Organiz
9	10	Intersch Intramur* Totalact	Organiz Hours Favfreq

*F ratio significant at the .01 level.

Table 77

Comparison of Participation Variables by Pairs of Grades--Year 2

Pairs of Grades		First Grade Higher	Second Grade Higher
7	8	Hours Favfreq Totalact	Intersch Intramur Organiz
7	9	Intramur Organiz Hours Totalact	Intersch Favfreq
7	10	Intersch Intramur* Organiz Hours* Favfreq Totalact	
7	11	Intramur* Organiz Hours* Favfreq Totalact	Intersch
8	10	Intersch Intramur* Organiz Hours Favfreq Totalact	
8	11	Intersch Intramur* Organiz Hours* Favfreq Totalact	
9	10	Intersch Intramur* Organiz Hours Favfreq	Totalact
9	11	Intersch Intramur* Organiz Hours Favfreq Totalact	

*F ratio significant at the .01 level.

APPENDIX P

Canonical Correlation Weights

Table 78

Canonical Weights of Participation and Related Variables for Total Sample

Variable	Canonical Set 1	Canonical Set 2	Canonical Set 3	Canonical Set 4
Participation Variables				
Intramur	.24	-.44	.64	.22
Organiz	.22	-.02	-.70	.27
Hours	.20	-.73	-.12	-.58
Totalact	.60	.36	-.08	-.25
Favfreq	.29	-.09	.04	.70
Intersch	.22	.53	.22	-.47
Related Variables				
Grade	-.31	.56	.04	.07
Sotpart	.28	.20	.56	.31
Sothenc	.27	.28	.59	.08
Fathsoc	-.43	-.35	-.05	-.03
Mothsoc	.13	.01	-1.07	.08
SES	.01	.34	-.41	-.09
Tomboy	.06	-.26	-.06	-.18
Actpref	.05	.21	.09	.01
Physed	.06	.13	-.06	.15
Pasocial	.07	.16	.28	-.24
Bodycat	-.04	-.05	-.16	.33
Androgyn	-.23	-.22	-.09	-.48
Esteem	-.11	-.14	-.13	.34
Realist	-.00	.10	-.13	-.18
Investig	.09	-.06	-.03	-.43
Facmov1	.26	.34	.19	.00
Facmov2	-.08	-.01	.15	-.10
Facmov3	-.08	.07	.05	.21
Movesat	.21	-.42	-.22	-.40
Equipmen	.44	.09	-.22	.07
Health	-.15	-.17	-.36	.01
Thrill	.03	-.19	-.06	.22
Beauty	.02	.08	-.03	.38
Release	-.05	.08	.02	-.54
Training	.20	-.00	.20	.15
Competit	-.01	-.15	.20	-.08
Image	.12	-.03	.19	.17

Table 79

Canonical Weights of Participation and Related Variables by Grade

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
Participation Variables					
Intramur	.25	.43	.55	-.31	.36
Organiz	-.30	.02	.01	-.66	-.15
Hours	-.08	-.05	-.52	-.24	.36
Totalact	-.88	.89	.42	-.34	.12
Favfreq	-.08	.17	.18	-.09	.18
Intersch	-.21	-.02	.08	.12	.66
Related Variables					
Sotpart	-.25	.35	.54	-.05	-.22
Sothenc	-.25	.09	.53	-.24	.41
Fathsoc	.78	.00	-.03	.16	.03
Mothsoc	-.38	-.30	-.82	-.06	.17
SES	-.19	-.38	-.00	.27	.02
Tomboy	-.04	.19	-.20	.05	-.01
Actpref	.01	-.22	-.08	-.05	-.03
Physed	.10	.40	-.12	.17	-.08
Pasocial	-.26	.01	.46	.21	-.05
Bodycat	-.28	-.55	.18	-.14	-.21
Androgyn	.22	-.07	-.10	.03	-.26
Esteem	.06	-.47	-.09	.01	.21
Realist	-.00	.08	.03	.25	-.00
Investig	-.23	.56	.16	-.06	.27
Facmov1	-.16	-.38	.10	.22	.09
Facmov2	.14	-.47	-.16	.28	-.32
Facmov3	.15	-.05	-.11	.19	-.11
Movesat	-.01	.57	.09	-.72	.99
Equipmen	-.47	.38	.09	-.50	.16
Health	.27	-.36	.17	-.14	-.08
Thrill	.23	-.01	.03	-.29	.17
Beauty	.15	.44	-.12	-.01	-.20
Release	-.17	.03	-.48	.01	-.06
Training	-.03	-.00	.10	-.13	.01
Competit	-.03	-.37	.08	-.41	-.11
Image	-.03	.38	.13	.35	.16

APPENDIX Q

Correlations of Participation and Related Variables

Table 80

Correlations of Related Variables with Interschool Teams

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Facmovl	.02	.26(1)[a]	.57(1)	.30(2)	.36(2)	.26(1)
Sex Role	-.12	-.11	-.26(5)	-.17	-.41(1)	-.21(2)
Sothenc	.03	.20(2)	.23(6)	.37(1)	.27(4)	.19(3)
Equipmen	.10	.13	.12	.10	.22(8)	.18(4)
Movesat	-.09	.06	.49(2)	.16	.26(5)	.14(5)
Esteem	-.12	-.08	-.27(4)	-.22(4)	.10	-.14(5)
Tomboy	.02	.14	.27(4)	.20(6)	.08	.13(6)
Sotpart	.06	.26(1)	.08	.24(3)	.02	.12(7)
Actpref	-.08	-.13	.000	-.11	-.31(8)	-.12(7)
Social	.10	.07	.11	.14	.20(9)	.12(7)
Other significant correlations	Physed .20(1) Health -.17(2) Training -.15(3)	Mothsoc .26(1) Fathsoc .26(1) Yonbroth -.20(2)	Bodycat .33(3) Training .27(4)	Pasocial .21(5) Training .21(5)	Investig .24(6) SES .23(7)	
Total significant correlations[b]	3	6	12	11	12	18

[a] The number in brackets indicates a correlation that was significant at the .05 level.

[b] Because of space restrictions, not all significant correlations for each grade level or for the total sample could be presented. For the total sample, only correlations of .12 and above were included. Other related variables that were significantly correlated with the participation variables for separate grades were added to the bottom of the table only if they had relatively high correlation coefficients. Thus, the total significant correlations value at the conclusion of the tables does not always coincide with the number of significant correlations presented in the table.

Table 81

Correlations of Related Variables with Intramural Activities

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Competit	.02	.18(3)[a]	.18	.46(1)	-.02	.18(1)
Sothenc	.08	.23(1)	.08	.22(6)	.28(3)	.17(2)
Facmovl	-.03	.08	.18	.13	.41(1)	.15(3)
Training	.03	.13	.19	.29(2)	-.05	.14(3)
Sex Role	-.02	-.12	-.19	-.27(3)	-.22(7)	-.15(4)
SES	-.17(3)	-.17	-.03	-.07	.03	-.13(5)
Thrill	.03	.12	.27(1)	.20(8)	.25(4)	.12(6)
Movesat	-.02	.05	.07	.14	.38(2)	.12(6)
Physed	.13	.04	.15	.24(5)	.03	.12(6)
Image	.05	.15	.12	.29(2)	.14	.12(6)
Other significant correlations	Investig -.25(1) Artist -.18(2)	Equipmen .19(2)	Investig .27(1) Tomboy .23(2) Convent .22(3) Pasocial .22(3)	Health .27(3) Pasocial .26(4) Release .26(4)	Yonbroth .28(3) Fathsoc .25(4) Bodycat .24(5) Mothsoc .23(6)	
Total significant correlations	4	3	6	12	11	17

[a]The number in brackets indicates a correlation that was significant at the .05 level.

Table 82

Correlations of Related Variables with Community Organized Activities

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Mothsoc	.34(2)[a]	.34(1)	.35(3)	.51(2)	.26(3)	.36(1)
Fathsoc	.20(8)	.31(3)	.19	.52(1)	.31(1)	.30(2)
SES	.36(1)	.30(4)	.39(1)	.09	.27(2)	.28(3)
Movesat	.21(7)	.28(5)	.29(4)	.40(4)	.23(5)	.26(4)
Facmov1	.11	.32(2)	.37(2)	.30(6)	.25(4)	.25(5)
Sotpart	.23(5)	.15	.14	.32(5)	.26(3)	.22(6)
Sothenc	.17(10)	.15	.18	.40(4)	.23(5)	.20(7)
Actpref	-.20(8)	-.18(9)	-.23(7)	-.21(11)	-.22(6)	-.20(7)
Equipmen	.27(3)	.20(8)	.23(7)	.32(5)	.18(7)	.20(7)
Sex Role	-.25(4)	-.22(6)	-.35(3)	-.22(10)	-.02	-.20(7)
Tomboy	.22(6)	.05	.27(6)	.05	.18(7)	.15(8)
Bodycat	.17(10)	.04	.03	.28(7)	.12	.14(9)
Thrill	.04	.06	.20(9)	.43(3)	.07	.13(10)
Realist	.16(11)	.32(2)	.14	-.09	.07	.12(11)
Facmov3	.19(9)	.09	.11	-.07	.18(7)	.12(11)
Other significant correlations		Physed .21(7)	Image .28(5) Pasocial .21(8)	Esteem -.30(6)		
Total significant correlations	13	10	11	15	11	22

[a] The number in brackets indicates a correlation that was significant at the .05 level.

Table 83

Correlations of Related Variables with Average Hours Per Day

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Mothsoc	.05	.35(1)[a]	.12	.23(6)	.19(5)	.20(1)
Competit	.11	.12	.08	.18	.11	.18(2)
Movesat	-.02	.35(1)	.22(5)	.26(3)	.23(2)	.17(3)
Fathsoc	.05	.23(4)	.04	.28(2)	.15	.17(4)
Training	.03	.16	.15	.25(4)	.12	.15(5)
Facmovl	.01	.15	.21(6)	.24(5)	.06	.14(6)
Tomboy	.01	.23(4)	.34(1)	.14	.17	.13(7)
Actpref	-.05	-.25(3)	-.09	-.26(3)	-.11	-.12(8)
Thrill	.06	.13	-.03	.26(3)	.26(1)	.12(8)
Sothenc	.11	.22(5)	-.08	.29(1)	.21(4)	.12(8)
Yonbroth	-.09	-.17	-.26(3)	-.08	-.11	-.12(8)
Other significant correlations		Facmov2 .26(2) Equipmen .26(2)	Convent -.23(4)	Equipmen .22(7)	Health .22(3)	
Total significant correlations	0	10	5	11	7	18

[a] The number in brackets indicates a correlation that was significant at the .05 level.

Table 84

Correlations of Related Variables with Total Activities

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Equipmen	.50(1)[a]	.35(1)	.42(1)	.33(1)	.42(1)	.37(1)
Esteem	-.22(5)	-.17	-.23(8)	-.30(3)	-.24(5)	-.23(2)
Sex Role	-.26(2)	-.12	-.20(10)	-.34(1)	-.19(10)	-.23(2)
Movesat	.23(4)	.14	.10	.26(4)	.40(2)	.22(3)
Mothsoc	.21(6)	.25(3)	.28(5)	.18	.18(11)	.21(4)
Sotpart	.17(7)	.23(5)	.14	.23(6)	.24(5)	.19(5)
Sothenc	.14(10)	.11	.34(3)	.16	.20(9)	.18(6)
Realist	.12	.19(7)	.27(6)	.02	.21(8)	.16(7)
Investig	.05	.21(6)	.38(2)	.01	.19(10)	.16(7)
Social	.08	.15	.30(4)	.17	.15	.16(8)
Physed	.13	.19(7)	.14	.13	.23(6)	.15(8)
Pasocial	.11	.14	.21(9)	.14	.20(9)	.15(8)
Fathsoc	.15(9)	.17	.07	.21(7)	.20(9)	.15(8)
Facmovl	.15(9)	.06	.13	.25(5)	.23(6)	.15(8)
Beauty	.11	.08	.15	.21(7)	.22(7)	.14(9)
Release	.25(3)	.16	-.16	.21(7)	.25(4)	.14(9)
Facmov2	.15(9)	.19(7)	-.02	.08	.25(4)	.14(9)
Artist	-.004	.24(4)	.18	.16	.16	.13(10)
Enterpri	.11	.11	.24(7)	-.04	.22(7)	.13(10)
Image	.14(10)	.07	.20(10)	.14	.10	.13(10)
Tomboy	.08	.13	.17	.09	.16	.12(11)
Actpref	-.12	-.17	-.07	-.13	-.12	-.12(11)
SES	.15(9)	.26(2)	.14	.04	-.06	.12(11)
Total significant correlations	14	11	12	9	22	26

[a] The number in brackets indicates a correlation that was significant at the .05 level.

Table 85

Correlations of Related Variables with Frequency of Favourite Activities

Variable	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Total
Facmov1	.15	.17	.20(8)[a]	.29(3)	.28(7)	.21(1)
Movesat	.13	.07	.17	.25(5)	.36(2)	.19(2)
Sothenc	.09	.05	.20(8)	.34(2)	.39(1)	.18(3)
Equipmen	.16(1)	.09	.17	.43(1)	.19(11)	.17(4)
Training	.04	.14	.35(1)	.20(8)	.11	.16(5)
Physed	.14(3)	.01	.16	.16	.27(8)	.15(6)
Competit	.10	.11	.23(5)	.19	.14	.15(6)
Fathsoc	.05	-.08	.30(3)	.27(4)	.30(5)	.15(6)
Actpref	-.07	-.17	-.11	-.09	-.32	-.14(7)
Mothsoc	-.00	-.00	.29(4)	.21(7)	.39(1)	.14(7)
Facmov3	.12(2)	.04	.03	.08	.36(2)	.14(7)
Bodycat	.04	-.06	.22(6)	.34(2)	.29(6)	.14(7)
Beauty	.15(2)	.12	.21(7)	.19	-.003	.13(8)
Image	.09	.08	.21(7)	.19	.11	.13(8)
Sex Role	-.10	-.12	-.19	-.18	.13	-.13(8)
Thrill	.05	.18(2)	.17	.20(8)	.08	.12(9)
Other significant correlations		Realist .24(1) Height .18(2)	Sotpart .31(2)	Health .24(6)	Sotpart .31(4)	
Total significant correlations	4	3	11	10	14	20

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[a] The number in brackets indicates a correlation that was significant at the .05 level.

APPENDIX R

Correlation Matrix

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PHYSICAL ACTIVITY INVOLVEMENT OF ADOLESCENT GIRLS  (YEAR 2)                      08/06/79        PAGE    9

FILE    NONAME    (CREATION DATE = 08/06/79)
SUBFILE   SIX          SEVEN         EIGHT         NINE          TEN

CORRELATION COEFFICIENTS..


              INTRAMUR    ORGANIZ      HOURS      LIVEVENT    SOTPART2    SOTHENC2     FATHSOC     MOTHSOC      SECINV     TOTALAC1

INTRAMUR      1.00000    -0.00474     0.07705    -0.01079     0.11018     0.16582     0.05570     0.03767     0.03934     0.18192
ORGANIZ      -0.00474     1.00000     0.15072     0.21377     0.21924     0.20002     0.29655     0.35581     0.15511     0.16720
HOURS         0.07705     0.15072     1.00000     0.02311     0.06633     0.12038     0.17020     0.19959     0.07178     0.19080
LIVEVENT     -0.01079     0.21377     0.02311     1.00000     0.21426     0.18672     0.19405     0.21101     0.26853     0.12453
SOTPART2      0.11018     0.21924     0.06633     0.21426     1.00000     0.35089     0.63319     0.61299     0.22806     0.19285
SOTHENC2      0.16582     0.20002     0.12038     0.18672     0.35089     1.00000     0.54477     0.53747     0.20075     0.18365
FATHSOC       0.05570     0.29655     0.17020     0.19405     0.63319     0.54477     1.00000     0.78297     0.18622     0.14557
MOTHSOC       0.03767     0.35581     0.19959     0.21101     0.61299     0.53747     0.78297     1.00000     0.21720     0.20875
SECINV        0.03934     0.15511     0.07178     0.26853     0.22806     0.20075     0.18622     0.21720     1.00000     0.13591
TOTALAC1      0.18192     0.16720     0.19080     0.12453     0.19285     0.18365     0.14557     0.20875     0.13591     1.00000
FAVFREQ1      0.10672     0.19399     0.07558     0.12448     0.10999     0.18324     0.15246     0.14304     0.19918     0.17877
SES          -0.13410     0.28234     0.00296     0.04813     0.23991     0.10018     0.22402     0.18161     0.04170     0.12180
TOMBOY        0.05912     0.15445     0.12774     0.17768     0.15697     0.08601     0.10038     0.13547     0.11848     0.12001
ACTPREF      -0.07336    -0.19858    -0.11595    -0.17422    -0.15537    -0.17948    -0.13905    -0.14574    -0.11370    -0.12388
PHYSED        0.12045     0.10144     0.10285     0.09008     0.15223     0.11560     0.18465     0.16909     0.22462     0.14702
PASOCIAL      0.08791     0.04142     0.07339     0.11253     0.17158     0.22092     0.18852     0.18569     0.17268     0.14509
INTERSCH      0.22047     0.18775     0.05197     0.17360     0.11788     0.18976     0.06620     0.07878     0.18557     0.13210
BODYCAT       0.06392     0.13765     0.11116     0.07063     0.11794     0.13936     0.26355     0.19291     0.13566     0.07632
ANDROGYN     -0.15272    -0.19501     0.01923    -0.15007    -0.10251    -0.13375    -0.15087    -0.14260    -0.14220    -0.22873
ESTEEM       -0.03888    -0.07353    -0.02939    -0.12179    -0.18936    -0.22130    -0.19008    -0.18567    -0.12042    -0.23257
REALIST2     -0.05680     0.11993     0.06024     0.10048     0.05649     0.17912     0.08428     0.09762     0.07980     0.16004
INVESTI2      0.04703     0.09329     0.09158    -0.02134     0.07306     0.16511     0.15582     0.14072     0.12201     0.15516
FACMOV1       0.15455     0.25214     0.14228     0.13355     0.17328     0.12693     0.23523     0.21805     0.19126     0.15208
FACMOV2       0.02306     0.09040     0.10725     0.06318     0.12555     0.14647     0.10545     0.11639     0.06931     0.13685
FACMOV3       0.03741     0.11891     0.03325     0.08862     0.08895     0.12183     0.17396     0.16062     0.07105     0.04711
MOVESAT       0.11952     0.26378     0.17010     0.15193     0.20664     0.21946     0.28466     0.28059     0.18683     0.21903
EQUIPMEN      0.01987     0.19818    -0.01134     0.27040     0.21212     0.26972     0.21683     0.19048     0.12271     0.37299
HEALTH        0.07640     0.06215     0.10423     0.09954     0.16360     0.18312     0.17323     0.17078     0.18517     0.06720
THRILL        0.12227     0.13183     0.11894     0.07353     0.08270     0.19892     0.15223     0.12143     0.12066     0.08099
BEAUTY        0.08749     0.08551     0.05322     0.00868     0.17238     0.20643     0.20342     0.18846     0.08516     0.13552
RELEASE       0.02578     0.05263     0.07691     0.06774     0.11871     0.08777     0.10403     0.10211     0.13378     0.14488
TRAINING      0.14378     0.05192     0.14632     0.05616     0.05735     0.06388     0.12939     0.11265     0.16542     0.06437
COMPETIT      0.17852     0.06355     0.18048     0.04574     0.03523     0.16066     0.13283     0.15360     0.11793     0.07787
IMAGE         0.11967     0.09695     0.07658     0.09276     0.10429     0.13519     0.10472     0.13078     0.11157     0.12762
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PHYSICAL ACTIVITY INVOLVEMENT OF ADOLESCENT GIRLS  (YEAR 2)                         08/06/79      PAGE   10

FILE    NONAME    (CREATION DATE = 08/06/79)
SUBFILE   SIX          SEVEN       EIGHT       NINE        TEN



             FAVFREQ1      SES        TOMBOY      ACTPREF     PHYSED     PASOCIAL    INTERSCH    BODYCAT     ANDROGYN     ESTEEM

INTRAMUR     0.10672    -0.13410     0.05912    -0.07336     0.12045     0.08791     0.22047     0.06392    -0.15272    -0.03888
ORGANIZ      0.19399     0.28234     0.15445    -0.19858     0.10144     0.04142     0.18775     0.13765    -0.19501    -0.07353
HOURS        0.07558     0.00296     0.12774    -0.11595     0.10285     0.07339     0.05197     0.11116     0.01923    -0.02939
LIVEVENT     0.12448     0.04813     0.17768    -0.17422     0.09008     0.11253     0.17360     0.07063    -0.15007    -0.12179
SOTPART2     0.10999     0.23991     0.15697    -0.15537     0.15223     0.17158     0.11788     0.11794    -0.10251    -0.18936
SOTHENC2     0.10324     0.10018     0.08601    -0.17948     0.11560     0.22092     0.18976     0.13936    -0.13375    -0.22130
FATHSOC      0.15246     0.22402     0.10038    -0.13905     0.18465     0.18852     0.06620     0.26355    -0.15087    -0.19808
MOTHSOC      0.14304     0.18161     0.13547    -0.14574     0.16909     0.18569     0.07878     0.19291    -0.14260    -0.18567
SECINV       0.19918     0.04170     0.11848    -0.11370     0.22462     0.17268     0.18557     0.13566    -0.14220    -0.12042
TOTALAC1     0.17877     0.12180     0.12001    -0.12388     0.14702     0.14509     0.13210     0.07632    -0.22873    -0.23257
FAVFREQ1     1.00000     0.02700     0.07653    -0.14357     0.14984     0.06711     0.12206     0.13552    -0.13327    -0.10523
SES          0.02700     1.00000     0.05660    -0.08769    -0.05596     0.07099     0.10443    -0.00547    -0.10936    -0.06719
TOMBOY       0.07653     0.05660     1.00000    -0.17032     0.05152     0.04460     0.12726    -0.01133    -0.21678    -0.04742
ACTPREF     -0.14357    -0.08769    -0.17032     1.00000    -0.09871    -0.13925    -0.11938    -0.09145     0.12502     0.10987
PHYSED       0.14984    -0.05596     0.05152    -0.09871     1.00000     0.31367     0.09610     0.46655    -0.08279    -0.20545
PASOCIAL     0.06711     0.07099     0.04460    -0.13925     0.31367     1.00000     0.08822     0.16562    -0.03513    -0.16042
INTERSCH     0.12206     0.10443     0.12726    -0.11938     0.09610     0.08822     1.00000     0.02355    -0.21169    -0.14463
BODYCAT      0.13552    -0.00547    -0.01133    -0.09145     0.46655     0.16562     0.02355     1.00000    -0.13545    -0.38152
ANDROGYN    -0.13327    -0.10936    -0.21678     0.12502    -0.08279    -0.03513    -0.21169    -0.13545     1.00000     0.23784
ESTEEM      -0.10523    -0.06719    -0.04742     0.10987    -0.20545    -0.16042    -0.14463    -0.38152     0.23784     1.00000
REALIST2     0.07068     0.08143     0.27475    -0.09622     0.08316     0.11550     0.07241     0.07507    -0.20767    -0.06935
INVESTI2     0.00265     0.05227     0.08083     0.05507     0.13060     0.08707     0.07221     0.13958    -0.16462    -0.11326
FACMOV1      0.20723     0.04624     0.22633    -0.31275     0.38296     0.18224     0.26165     0.36630    -0.25963    -0.20571
FACMOV2      0.00527     0.10526     0.04792    -0.05225     0.21762     0.11520     0.03303     0.41180    -0.11945    -0.30893
FACMOV3      0.13501    -0.01494     0.02390    -0.12816     0.10441     0.08388    -0.03510     0.20247    -0.00200    -0.13620
MOVESAT      0.18518     0.08808     0.15684    -0.25239     0.45063     0.23686     0.14079     0.61507    -0.28357    -0.38041
EQUIPMEN     0.16707     0.24147     0.16648    -0.17159     0.00370     0.15945     0.17680    -0.01815    -0.16602    -0.10831
HEALTH       0.10914     0.02711     0.00509    -0.15291     0.30804     0.59008    -0.00898     0.26534    -0.00793    -0.17781
THRILL       0.11979     0.04617     0.09876    -0.11248     0.24931     0.36210     0.07242     0.21008    -0.12750    -0.11710
BEAUTY       0.12603     0.08639    -0.03584    -0.06602     0.16078     0.47639     0.03418     0.14433     0.00849    -0.13766
RELEASE      0.05294     0.06469     0.07856    -0.03307     0.19825     0.42218     0.05808     0.17091    -0.07947    -0.11231
TRAINING     0.15591    -0.06731     0.05872    -0.07642     0.30706     0.29443     0.07280     0.19053    -0.01107    -0.04639
COMPETIT     0.15225    -0.09039    -0.01256    -0.13289     0.28823     0.42287     0.06052     0.25131    -0.08664    -0.09080
IMAGE        0.12632     0.09207     0.06194    -0.12797     0.19358     0.37172     0.03035     0.14257    -0.06261    -0.08000
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PHYSICAL ACTIVITY INVOLVEMENT OF ADOLESCENT GIRLS  (YEAR 2)                    08/06/79        PAGE   11

FILE     NONAME    (CREATION DATE = 08/06/79)
SUBFILE   SIX          SEVEN        EIGHT        NINE         TEN



              REALIST2     INVESTI2     FACMOV1      FACMOV2      FACMOV3      MOVESAT      EQUIPMEN     HEALTH       THRILL       BEAUTY

INTRAMUR      -0.05680      0.04703      0.15455      0.02306      0.03741      0.11952      0.01987      0.07640      0.12227      0.08749
ORGANIZ        0.11993      0.09329      0.25214      0.09040      0.11891      0.26378      0.19818      0.06215      0.13183      0.08551
HOURS          0.06024      0.09158      0.14228      0.10725      0.03325      0.17010     -0.01134      0.10423      0.11894      0.05322
LIVEVENT       0.10848     -0.02134      0.13355      0.06318      0.08862      0.15193      0.27040      0.09954      0.07353      0.00868
SOTPAST2       0.05649      0.07306      0.17328      0.12555      0.08895      0.20664      0.21212      0.16360      0.08278      0.17238
SOTHERC2       0.17912      0.16511      0.12693      0.14647      0.12183      0.21946      0.26972      0.18312      0.19892      0.20643
FATHSOC        0.08428      0.15582      0.23523      0.10545      0.17396      0.28466      0.21683      0.17323      0.15223      0.20342
MOTHSOC        0.09762      0.14072      0.21805      0.11639      0.16062      0.28059      0.19048      0.17078      0.12143      0.18846
SECINV         0.07980      0.12201      0.19126      0.06931      0.07105      0.18683      0.12271      0.10517      0.12066      0.08516
TOTALAC1       0.16004      0.15516      0.15208      0.13605      0.04711      0.21903      0.37299      0.06720      0.08099      0.13552
FAVFREQ1       0.07068      0.00265      0.20723      0.00527      0.13501      0.18518      0.16707      0.10914      0.11979      0.12603
SES            0.08143      0.05227      0.04624      0.10526     -0.01494      0.08808      0.24147      0.02711      0.04617      0.08639
TOMBOY         0.27475      0.08083      0.22633      0.04792      0.02390      0.15684      0.16648      0.00509      0.09876     -0.03584
ACTPREF       -0.09622      0.05507     -0.31275     -0.05225     -0.12816     -0.25239     -0.17159     -0.15291     -0.11248     -0.06602
PHYSED         0.08316      0.13060      0.38296      0.21762      0.10441      0.45063      0.00370      0.30804      0.24931      0.16078
PASOCIAL       0.11550      0.08707      0.18224      0.11520      0.08388      0.23686      0.15945      0.59008      0.36210      0.47639
INTERSCH       0.07241      0.07221      0.26165      0.03303     -0.03510      0.14079      0.17680     -0.00898      0.07242      0.03418
BODYCAT        0.07507      0.13958      0.36630      0.41180      0.20247      0.61507     -0.01815      0.26534      0.21008      0.14433
ANDROGYN      -0.20767     -0.16462     -0.25963     -0.11945     -0.00200     -0.28357     -0.16602     -0.00793     -0.12750      0.00849
ESTEEM        -0.06935     -0.11326     -0.20571     -0.30893     -0.13620     -0.38041     -0.10831     -0.17701     -0.11710     -0.13766
REALIST2       1.00000      0.31145      0.16599      0.04849     -0.02789      0.16863      0.17695      0.09709      0.14882      0.04436
INVESTI2       0.31145      1.00000      0.16652      0.06310     -0.08354      0.16488     -0.00043      0.10431      0.13631      0.09509
FACMOV1        0.16599      0.16652      1.00000      0.02913      0.02008      0.66829      0.02078      0.20136      0.19756      0.05421
FACMOV2        0.04849      0.06310      0.02913      1.00000      0.02968      0.54617      0.12632      0.11275      0.15752      0.10404
FACMOV3       -0.02789     -0.08354      0.02008      0.02968      1.00000      0.36943      0.08519      0.10230      0.04763      0.10497
MOVESAT        0.16863      0.16488      0.66829      0.54617      0.36943      1.00000      0.10507      0.24892      0.26990      0.17719
EQUIPMEN       0.17695     -0.00043      0.02078      0.12632      0.08519      0.10507      1.00000      0.08447      0.08792      0.09600
HEALTH         0.09709      0.10431      0.20136      0.11275      0.10230      0.24892      0.08447      1.00000      0.37750      0.44922
THRILL         0.14882      0.13631      0.19756      0.15752      0.04763      0.26990      0.08792      0.37750      1.00000      0.27676
BEAUTY         0.04436      0.09509      0.05421      0.10404      0.10497      0.17719      0.09600      0.44922      0.27676      1.00000
RELEASE        0.15194      0.04814      0.11889      0.14247      0.00819      0.19499      0.14227      0.39531      0.38239      0.30850
TRAINING       0.05787      0.10233      0.21256      0.05826      0.05011      0.21482      0.00483      0.41145      0.38936      0.27773
COMPETIT       0.06552      0.10513      0.25150      0.09707      0.05500      0.27982     -0.02291      0.47773      0.36201      0.38501
IMAGE          0.11230      0.04593      0.14332      0.11858      0.04826      0.18374      0.14143      0.43940      0.29483      0.37741
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PHYSICAL ACTIVITY INVOLVEMENT OF ADOLESCENT GIRLS   (YEAR 2)                                    08/06/79        PAGE   12

FILE     NONAME    (CREATION DATE = 08/06/79)
SUBFILE    SIX          SEVEN        EIGHT        NINE         TEN



                 RELEASE     TRAINING     COMPETIT     IMAGE

INTRAMUR         0.02578     0.14378      0.17052      0.11967
ORGANIZ          0.05263     0.05192      0.06355      0.09695
HOURS            0.07691     0.14632      0.18048      0.07658
LIVEVENT         0.06774     0.05616      0.04574      0.09276
SOTPART2         0.11871     0.05735      0.03523      0.10429
SOTHENC2         0.08777     0.06308      0.16066      0.13519
FATHSOC          0.10403     0.12939      0.13283      0.10472
MOTHSOC          0.10211     0.11265      0.15360      0.13078
SECINV           0.13378     0.16542      0.11793      0.11157
TOTALAC1         0.14488     0.06437      0.07787      0.12762
FAVFREQ1         0.05294     0.15591      0.15225      0.12632
SES              0.06469    -0.06731     -0.09039      0.09207
TOMBOY           0.07856     0.05872     -0.01256      0.06194
ACTPREF         -0.03307    -0.07642     -0.13289     -0.12797
PHYSED           0.19825     0.30706      0.28823      0.19358
PASOCIAL         0.42218     0.29443      0.42287      0.37172
INTERSCH         0.05808     0.07280      0.06052      0.03035
BODYCAT          0.17091     0.19053      0.25131      0.14257
ANDROGYN        -0.07947    -0.01107     -0.08664     -0.06261
ESTEEM          -0.11231    -0.04639     -0.09080     -0.08008
REALIST2         0.15194     0.05787      0.06552      0.11230
INVESTI2         0.04814     0.10233      0.10513      0.04593
FACMOV1          0.11889     0.21256      0.25150      0.14332
FACMOV2          0.14247     0.05826      0.09707      0.11858
FACMOV3          0.00819     0.05011      0.05500      0.04826
MOVESAT          0.19499     0.21482      0.27982      0.18374
EQUIPMEN         0.14227     0.00483     -0.02291      0.14143
HEALTH           0.39531     0.41145      0.47773      0.43940
THRILL           0.38239     0.38936      0.36201      0.29483
BEAUTY           0.30850     0.27773      0.38581      0.37741
RELEASE          1.00000     0.31450      0.32835      0.34878
TRAINING         0.31450     1.00000      0.43841      0.34939
COMPETIT         0.32835     0.43841      1.00000      0.43537
IMAGE            0.34878     0.34939      0.43537      1.00000
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APPENDIX S

Analysis of Variance with Repeated Measures

Table 83

Comparison of Year 1 and Year 2 Related Variables

Variable	Mean Year 1	Mean Year 2	St. Dev. Year 1	St. Dev. Year 2	Combined Mean	F by Grade	F by Year	F Interaction
REALIST	N = 543							
Gr. 6	.42	.47	.26	.30	.45	2.88	1.09	1.97
7	.48	.44	.24	.31	.46	p = .022*	p = .297	p = .098
8	.51	.51	.30	.32	.51			
9	.42	.39	.32	.30	.40			
10	.53	.48	.29	.32	.51			
Combined	.47	.46						
INVESTIG	N = 539							
Gr. 6	.52	.51	.24	.26	.52	4.98	6.17	.51
7	.51	.46	.23	.28	.48	p = .001*	p = .013*	p = .731
8	.52	.48	.27	.30	.50			
9	.47	.43	.28	.27	.45			
10	.39	.38	.26	.28	.39			
Combined	.49	.46						
ARTIST	N = 543							
Gr. 6	.71	.63	.19	.22	.67	1.32	10.23	5.33
7	.69	.63	.18	.24	.66	p = .263	p = .001*	p = .001*
8	.70	.68	.22	.22	.69			
9	.69	.73	.22	.21	.71			
10	.70	.68	.19	.20	.69			
Combined	.70	.66						
SOCIAL	N = 540							
Gr. 6	.76	.76	.13	.15	.76	.80	1.33	.86
7	.76	.74	.15	.14	.75	p = .527	p = .249	p = .490
8	.75	.77	.15	.15	.76			
9	.77	.78	.14	.12	.77			
10	.77	.78	.15	.16	.78			
Combined	.76	.76						
ENTERPRI	N = 543							
Gr. 6	.52	.52	.18	.21	.52	.81	.14	1.82
7	.53	.51	.19	.19	.52	p = .523	p = .709	p = .123
8	.56	.54	.19	.22	.55			
9	.54	.56	.19	.21	.55			
10	.51	.55	.20	.20	.53			
Combined	.53	.53						
CONVENT	N = 539							
Gr. 6	.56	.56	.22	.25	.56	.96	.92	.96
7	.53	.50	.23	.27	.51	p = .43	p = .34	p = .43
8	.54	.59	.23	.26	.57			
9	.56	.58	.27	.29	.57			
10	.55	.56	.27	.29	.56			
Combined	.55	.56						
TOMBOY	N = 532							
Gr. 6	2.29	2.30	1.03	1.06	2.30	.65	.04	.46
7	2.21	2.29	1.00	1.05	2.25	p = .63	p = .85	p = .77
8	2.37	2.35	1.12	1.09	2.36			
9	2.15	2.19	.98	.98	2.17			
10	2.37	2.30	.93	.84	2.34			
Combined	2.28	2.29						
ACTPREF	N = 530							
Gr. 6	1.88	1.76	.89	.83	1.82	.39	2.20	.56
7	1.92	1.81	.86	.84	1.87	p = .82	p = .14	p = .69
8	1.86	1.76	.81	.77	1.81			
9	1.77	1.80	.81	.83	1.78			
10	1.89	1.89	.90	.75	1.89			
Combined	1.87	1.80						

Variable	Mean Year 1	Mean Year 2	St. Dev. Year 1	St. Dev. Year 2	Combined Mean	F by Grade	F by Year	F Interaction
BODYCAT	N = 512							
Gr. 6	3.68	3.64	.50	.49	3.66	3.04	.79	1.43
7	3.59	3.54	.54	.54	3.56	p = .017*	p = .37	p = .22
8	3.49	3.52	.52	.47	3.50			
9	3.50	3.42	.44	.49	3.46			
10	3.47	3.53	.48	.46	3.50			
Combined	3.57	3.55						
MOVESAT	N = 532							
Gr. 6	3.66	3.77	.53	.51	3.72	1.58	7.57	.68
7	3.64	3.65	.56	.54	3.64	p = .18	p = .006*	p = .61
8	3.64	3.70	.55	.51	3.67			
9	3.65	3.67	.59	.51	3.66			
10	3.51	3.60	.52	.43	3.55			
Combined	3.62	3.69						
FACMOV1	N = 531							
Gr. 6	.21	.19	.78	.87	.20	3.90	.00	.95
7	-.01	-.08	.94	.96	-.04	p = .004*	p = .98	p = .44
8	-.07	.04	1.04	1.02	-.02			
9	.03	-.01	1.07	.93	.01			
10	-.28	-.26	.93	.86	-.27			
Combined	.003	-.004						
FACMOV2	N = 531							
Gr. 6	-.09	-.07	.91	.93	-.08	2.31	.00	.74
7	-.05	-.19	.91	.92	-.12	p = .06	p = .99	p = .56
8	.07	.07	.90	.74	.07			
9	.10	.15	.83	.82	.13			
10	.08	.15	.83	.96	.11			
Combined	.004	-.001						
FACMOV3	N = 531							
Gr. 6	-.06	.02	.99	.87	-.02	.42	.61	.49
7	.12	.02	.90	.97	.07	p = .79	p = .44	p = .74
8	.07	-.001	.90	.94	.04			
9	-.05	-.07	.92	.89	-.06			
10	.04	-.03	.89	.96	.01			
Combined	.02	-.01						
ESTEEM	N = 456							
Gr. 6	2.46	2.16	1.20	1.14	2.31	.07	4.42	.78
7	2.22	2.28	1.05	1.34	2.25	p = .99	p = .036*	p = .54
8	2.38	2.25	1.19	1.35	2.32			
9	2.40	2.26	1.36	1.48	2.33			
10	2.39	2.23	1.21	1.26	2.31			
Combined	2.38	2.22						
SEX ROLE	N = 504							
Gr. 6	.55	.50	.37	.34	.52	1.75	.46	1.39
7	.47	.48	.30	.34	.47	p = .14	p = .50	p = .24
8	.44	.49	.30	.35	.46			
9	.45	.51	.38	.42	.48			
10	.57	.55	.40	.37	.56			
Combined	.50	.51						
PHYSED	N = 508							
Gr. 6	3.76	3.63	.46	.50	3.69	3.74	1.84	2.43
7	3.67	3.62	.55	.50	3.64	p = .005*	p = .18	p = .047*
8	3.53	3.44	.50	.56	3.48			
9	3.55	3.66	.54	.53	3.60			
10	3.70	3.68	.40	.50	3.69			
Combined	3.66	3.60						
PASOCIAL	N = 567							
Gr. 6	5.79	5.68	.65	.69	5.73	1.43	.74	2.47
7	5.76	5.79	.74	.61	5.77	p = .22	p = .39	p = .044*
8	5.78	5.62	.70	.65	5.70			
9	5.73	5.86	.67	.57	5.79			
10	5.88	5.86	.62	.64	5.87			
Combined	5.79	5.75						

Variable	Mean Year 1	Mean Year 2	St. Dev. Year 1	St. Dev. Year 2	Combined Mean	F by Grade	F by Year	F Interaction
HEALTH	N = 566							
Gr. 6	5.95	5.92	.70	.68	5.94	1.75	1.37	.02
7	5.93	5.88	.74	.71	5.91	p = .14	p = .24	p = .99
8	5.77	5.73	.74	.75	5.75			
9	5.88	5.84	.67	.69	5.86			
10	5.93	5.88	.68	.70	5.90			
Combined	5.91	5.86						
THRILL	N = 559							
Gr. 6	5.05	5.10	.75	.77	5.07	1.14	.12	.77
7	5.28	5.15	.81	.82	5.22	p = .34	p = .73	p = .54
8	5.09	5.13	.76	.76	5.11			
9	5.05	5.08	.73	.70	5.06			
10	5.10	5.04	.71	.76	5.07			
Combined	5.11	5.10						
BEAUTY	N = 555							
Gr. 6	6.14	6.06	.75	.78	6.10	.94	4.95	.13
7	6.10	5.97	.87	.87	6.03	p = .44	p = .027*	p = .97
8	6.10	5.99	.79	.88	6.04			
9	6.16	6.08	.76	.78	6.12			
10	6.21	6.16	.80	.81	6.19			
Combined	6.14	6.05						
RELEASE	N = 554							
Gr. 6	5.47	5.52	.81	.78	5.50	1.20	1.26	.88
7	5.47	5.67	.89	.82	5.57	p = .31	p = .26	p = .47
8	5.44	5.49	.82	.83	5.46			
9	5.53	5.51	.81	.85	5.52			
10	5.66	5.63	.84	.79	5.64			
Combined	5.51	5.56						
TRAINING	N = 550							
Gr. 6	5.08	5.11	.85	.82	5.09	4.18	1.48	.69
7	5.05	5.02	.80	.78	5.04	p = .002*	p = .23	p = .60
8	4.96	4.87	.88	.78	4.91			
9	5.05	4.90	.84	.77	4.98			
10	4.75	4.76	.66	.65	4.76			
Combined	4.99	4.96						
COMPETIT	N = 545							
Gr. 6	5.82	5.67	.89	.88	5.75	8.15	9.13	.18
7	5.62	5.52	.88	.86	5.57	p = .001*	p = .003*	p = .95
8	5.57	5.45	.85	.79	5.51			
9	5.55	5.38	.92	.82	5.47			
10	5.21	5.14	.90	.83	5.17			
Combined	5.58	5.46						
IMAGE	N = 539							
Gr. 6	6.01	5.99	.81	.85	6.00	.20	1.19	.01
7	5.97	5.92	.89	.87	5.95	p = .94	p = .28	p = .99
8	5.96	5.90	.85	.84	5.93			
9	6.00	5.95	.71	.70	5.98			
10	5.95	5.91	.78	.85	5.93			
Combined	5.98	5.94						
SOTPART	N = 564							
Gr. 6	4.92	5.01	.97	.89	4.97	2.36	1.89	1.99
7	5.04	5.05	.81	.75	5.05	p = .052*	p = .17	p = .10
8	4.97	4.96	.80	.75	4.97			
9	4.87	4.66	.82	.73	4.77			
10	4.99	4.83	.77	.86	4.91			
Combined	4.96	4.93						
SOTHENC	N = 555							
Gr. 6	4.62	4.75	.95	.81	4.69	2.99	.02	1.17
7	4.87	4.84	.78	.70	4.86	p = .019*	p = .89	p = .32
8	4.79	4.79	.78	.68	4.79			
9	4.70	4.57	.70	.77	4.64			
10	4.59	4.59	.79	.75	4.59			
Combined	4.70	4.72						

Variable	Mean Year 1	Mean Year 2	St. Dev. Year 1	St. Dev. Year 2	Combined Mean	F by Grade	F by Year	F Interaction
FATHSOC	N = 507							
Gr. 6	4.56	4.56	1.01	1.10	4.56	9.12	21.83	2.09
7	4.59	4.43	1.01	.93	4.51	p = .001*	p = .001*	p = .08
8	4.31	4.13	1.00	.89	4.22			
9	4.07	3.79	.95	.92	3.93			
10	4.29	3.93	.95	.86	4.11			
Combined	4.40	4.23						
MOTHSOC	N = 538							
Gr. 6	4.50	4.52	1.09	1.02	4.51	8.97	11.53	2.62
7	4.48	4.27	.96	.96	4.38	p = .001*	p = .001*	p = .034*
8	4.24	4.18	.95	.94	4.21			
9	3.94	3.84	.94	.87	3.89			
10	4.21	3.85	.87	.87	4.03			
Combined	4.32	4.19						
EQUIPMEN	N = 476							
Gr. 6	2.89	3.50	1.54	1.54	3.20	11.25	2.83	5.05
7	3.52	4.02	1.94	1.56	3.77	p = .001*	p = .09	p = .001*
8	4.28	3.88	1.79	1.83	4.08			
9	4.24	4.42	1.93	1.94	4.33			
10	4.65	4.49	1.83	2.07	4.57			
Combined	3.83	4.02						
LIVEVENT	N = 557							
Gr. 6	2.67	2.92	1.51	1.41	2.79	1.46	.32	.86
7	2.90	2.95	1.46	1.38	2.92	p = .21	p = .57	p = .49
8	2.92	2.92	1.28	1.22	2.92			
9	2.93	2.91	1.19	1.25	2.92			
10	3.22	3.11	1.31	1.21	3.17			
Combined	2.90	2.96						
SECINV	N = 561							
Gr. 6	2.91	3.12	1.11	1.07	3.01	.48	1.25	.87
7	2.97	2.94	1.05	1.11	2.95	p = .75	p = .27	p = .48
8	3.03	3.09	1.23	1.09	3.06			
9	3.05	3.09	1.16	1.07	3.07			
10	3.14	3.12	1.13	1.21	3.13			
Combined	3.00	3.07						